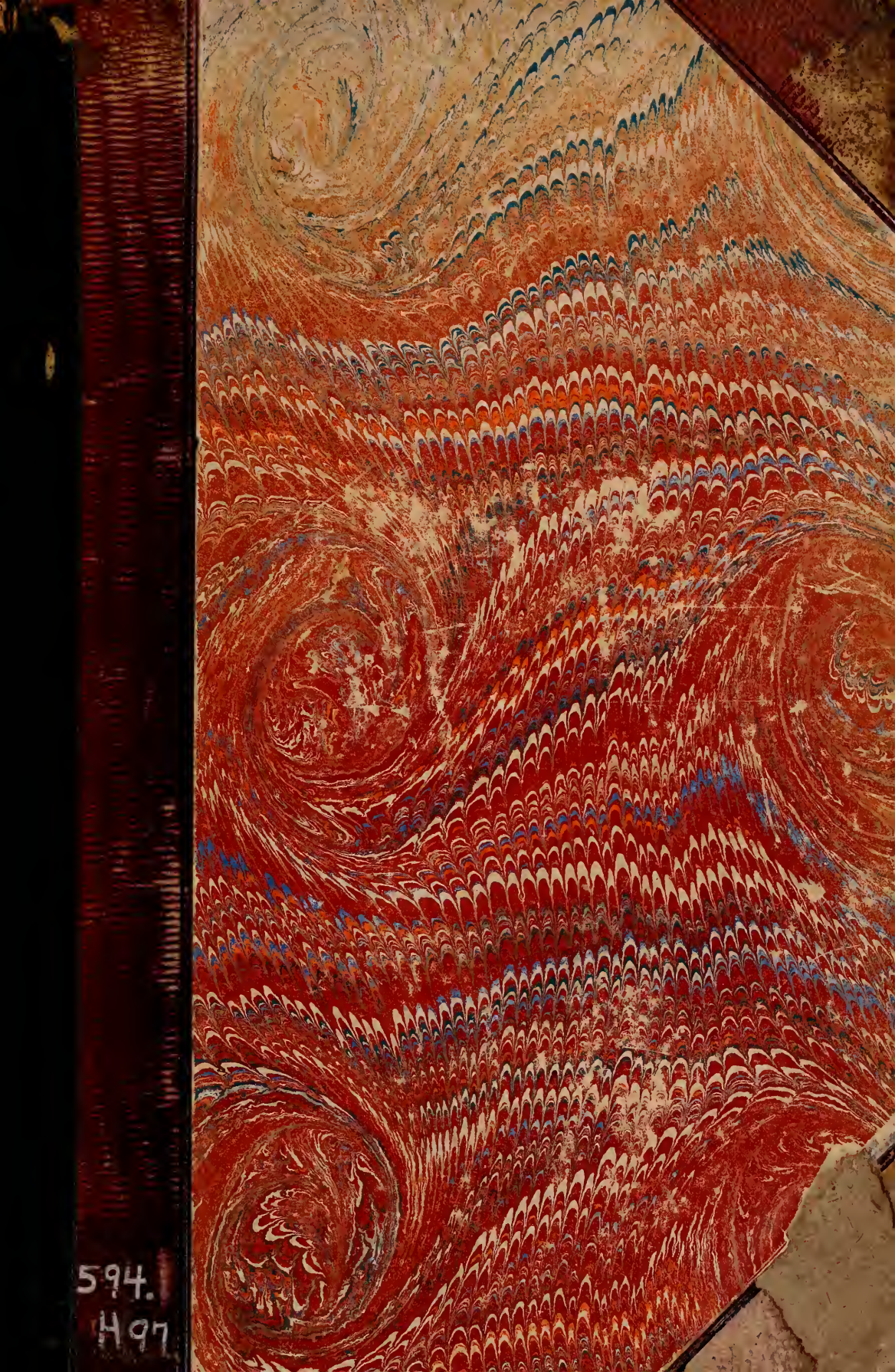
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JAMES HECTOR, M.D., F.R.S.,
DIRECTOR.

CATALOGUE

OF THE

MARINE MOLLUSCA

OF

NEW ZEALAND,

WITH DIAGNOSES OF THE SPECIES.

BY

FREDERICK WOLLASTON HUTTON, F.G.S., C.M.Z.S.,
ASSISTANT GEOLOGIST.

Published by Command.

WELLINGTON.
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PREFACE.

The collection of New Zealand Shells now accumulated in the Colonial Museum, and on which the following Catalogue is chiefly founded, was commenced by a small number of species transferred to the Museum by the New Zealand Society.

These were soon afterwards extensively added to by Mr. Charles Traill, who collected on various parts of the coast, from the North Cape to Stewart's Island, and also in the Chatham Islands. Mr. Traill devoted much time to the mounting and general arrangement of the shells, but the first attempt at their classification was made by Mr. Edwin Stowe, who in 1870 prepared a catalogue, and determined many of the genera and a few species. Mr. Stowe also contributed a large number of duplicates, which will be useful for exchanges, and added a few new species found in the vicinity of Wellington.

The collection has also been enriched by some interesting species found in Auckland by Mr. T. Kirk, and by Mr. H. H. Travers in the Chatham Islands.

Besides the foregoing, the collections have been added to by the various members of the Geological Survey Department, and by private donations, which have been duly acknowledged in the Annual Reports of the Museum.

Most of the collections have been made on the sea shore, and consist chiefly of such shells as are cast up on the beach by storms, or which inhabit the rocks between tide-marks. Dredging has

only been tried in a few instances, but generally with good results. To Captain Fairchild, of the Government p.s. "Luna," the Museum is indebted for the result of several casts in the Hauraki Gulf and in the Wanganui Bight. Mr. Traill used the dredge a few times in the Northern District and in Stewart's Island, and a few deep casts were obtained by myself among the wonderful sounds and inlets of the West Coast of Otago. These imperfect attempts have been so far encouraging that we may be sure that systematic dredging will give most satisfactory results to Conchologists; and there is also ample work for observers in determining the geographical distribution of our shells, and the relative prominence of the species on different parts of the coast, which is a point of some importance to the Geologist in investigating the Later Tertiary Strata. The only attempt in this direction is that to be found in a paper by Mr. T. Kirk on the Conchology of Great Omaha. (*Trans. N.Z. Inst.*, v., *p.* 365.)

To observers and collectors who will assist in this work, it is hoped that the following Catalogue will be of service. In preparing it, Captain Hutton has availed himself of all collections and other sources of information he could command in the Colony, respecting which he furnishes the following remarks :—

"All the species mentioned in the present catalogue have been found, or are supposed to have been found, in New Zealand, except a few which at present appear to be peculiar to the Chatham Islands; these latter are distinguished in the text by the words 'Chatham Islands only.' Although confined to the marine mollusca, I have also included in it the only species of fresh water polyzoa yet discovered in New Zealand, which I found in abundance last February in the Malvern Hills.

"I have failed to get descriptions of the following species, viz., *Buccinum melo*, Lesson, Rev. Zool., 1840, p. 355; *Purpura novæ zealandiæ*, Lesson, l.c., 1841 (?), p. 355; *Purpura tessellata*, Lesson, l.c., 1840, p. 356; *Purpura rodostoma*, Lesson, l.c., 1840, p. 355; and *Turbo lagonkairii*, Deshayes, Mag. Zool., 1839, t. 6; but as none of them are mentioned by Deshayes in the last edition of the *Animaux sans Vertèbres* (1844), I presume that the descriptions are not sufficient for identification."

The literature of New Zealand Conchology being scattered through many works on Natural History, most of which are not to be obtained in the Colony, a critical list of all New Zealand species hitherto published or represented in the European Museums has been prepared for the Department by Dr. von Martens, of Berlin, and will be published in a separate pamphlet, which will form a useful supplement to this Catalogue, by giving all the synonyms of the different species. This separation of the work into two parts will be less confusing to collectors, and is moreover due both to Dr. von Martens and to Captain Hutton, as they worked independently, the manuscript having been received too late to be employed in the preparation of the Catalogue, as was originally intended.

James Hector.

Colonial Museum, 7th May, 1873.

CONTENTS.

	Page
Synopsis of the Classes	ix
Explanation of the terms used	xi
Explanation of the Plate	xiv
Key to the Families	xv
Cephalopoda	1
Pteropoda	5
Heteropoda	6
Gasteropoda	7
Lamellibranchiata	58
Brachiopoda	85
Polyzoa	87
Tunicata	104

ERRATA.

Page 1. Erase the asterisk from *P. cordiformis*.

„ 30. *Permetus carinifera*, Gray, is an annelid belonging to the genus *Plagostegus*.

„ 52. *For* "Flaminea," *read* "Haminea."

„ 66. *For* "*Tellinæ*" *read* "*Tellina*."

„ 71. *C. alatus* should have an asterisk before it.

„ 86. Erase the asterisk from *M. evansii*. Dr. Hector obtained a specimen in Dusky Bay, which locality is erroneously placed to *T. rubicunda*.

SYNOPSIS OF THE CLASSES.

SUB-KINGDOM—MOLLUSCA.

Soft bodied animals, usually provided with an exo-skeleton; the intestinal canal bounded by its own proper walls, and completely shut off from the perivisceral cavity.

Division A.—Odontophora.

Nervous system of three principal pairs of ganglia; heart well developed, never composed of less than two chambers; tongue with lingual teeth.

Cephalopoda.—Mouth surrounded by a circle of eight or more arms, p. 1.

Pteropoda.—Swimming by means of two fins on each side of the mouth, p. 5.

Heteropoda.—Swimming by means of a raft-like foot, p. 6.

Gasteropoda.—Head distinct, creeping by means of a foot; shell never bivalve, p. 7.

Division B.—Acephala.

Nervous system of three principal pairs of ganglia; heart of two or three chambers; no head nor lingual teeth.

Lamellibranchiata.—Body protected by a bivalve shell; mantle divided into two lobes, p. 58.

Division C.—Molluscoida.

Nervous system of a single ganglion, or of a principal pair with accessory ganglia; heart imperfect or wanting.

Brachiopoda.—Simple; body protected by a bivalve shell, p. 85.

Polyzoa.—Composite, body protected by a horny or calcareous cell, p. 87.

Tunicata.—Simple or composite; body protected by a leathery tunic, p. 104.

EXPLANATION OF THE TERMS USED.

Cephalopoda (fig. 7).

The Cephalopoda are all marine. The body is symmetrical; the head is distinct, with a pair of large eyes, and the mouth in the centre. Inside the mouth are a pair of horny mandibles, shaped like the beak of a parrot. The mouth is surrounded by a circle of arms. In the Octopod cuttle fish there are eight of these arms, all being nearly alike, and provided with rows of suckers (fig 7*b*) shaped like small cups. In the Decapod cuttle fish there are ten arms, but two of these, called TENTACULAR ARMS (fig. 7*a*), are longer than the others, and bear suckers only at their extremities, which are sometimes enlarged or club-shaped. The respiratory organs consist of two or four gills on the sides of the body, in a large branchial cavity opening forward on the under side of the head; in the middle of this opening is placed the SIPHON or FUNNEL. Water is admitted into the branchiæ by the expansion of the outer mantle; when the mantle is contracted, this water is forcibly expelled through the siphon, forcing the animal in a backward direction. The siphon is provided with a valve, which permits the egress of water, but prevents its ingress.

All the Cephalopoda, except the Nautilus and the Argonaut, are naked, but are provided with an internal shell known as the cuttle-bone or PEN, which is either horny or calcareous. In some cases a chambered portion, or PHRAGMACONE, is added; and in Spirula the phragmacone forms the whole of the internal shell, and is coiled into a spiral, the coils of which are not in contact. The shell of the Argonaut, or Paper Nautilus, is not divided into chambers, and the animal is not attached to it, but can leave it at pleasure. The female only is provided with this shell, and she uses the empty apex as a receptacle for the ova.

Pteropoda.

The Pteropoda are all oceanic, swimming by two wing-like fins on each side of the head. They are usually enclosed in a horny translucent shell, which is symmetrical. They form the principal food of the whale in high latitudes, but are seldom seen by the shore naturalist.

Heteropoda.

This class also consists entirely of oceanic animals, and the purple snail-like shell of Ianthina is all that the shore naturalist is likely to collect. In them the foot of the Gasteropoda is modified into a raft-like float, while motion is effected by means of a fin-like tail.

Gasteropoda (fig. 8).

The Gasteropoda, or Univalves, can be divided into two groups, one breathing air (PULMONIFERA), the other water (BRANCHIFERA). The young of the former when

born differ from their parents only in size; while in the latter the young pass through a laval state, in which the animal is enclosed in a spiral involute shell, closed by an opercnlum, and instead of creeping along the bottom they swim in the ocean by means of a pair of ciliated fins. In this stage there is hardly any difference between species belonging to widely different families. This embryonic shell may be either entirely lost in the adult, in which case the animal is said to be naked (NUDIBRANCHIATA), or it may be developed into a univalve or multivalve shell, but never into a bivalve one. The univalve shell may be either CONICAL (*Patella*), BOAT-SHAPED (*Crypta*), or spiral; in which latter case it may be IRREGULARLY SPIRAL (*Vermetus*), or REGULARLY SPIRAL. The regularly spiral shell may have various shapes, such as TURRETED (*Turritella*), GLOBULAR (*Natica*), DEPRESSED (*Rotella*), CONVOLUTE (*Bulla*), FUSIFORM (*Fusus*), TROCHIFORM (*Imperator*), TURBINATED (*Turbo*), or EAR-SHAPED (*Haliotis*). Nearly all the spiral shells are DEXTRAL or right-handed, but a few (*Cerithium* in part) are SINISTRAL or left-handed. The convolutions of the shell are called WHORLS, and the AXIS around which the whorls are coiled is sometimes hollow or PERFORATED, and the aperture is called the UMBILICUS. Generally, however, the axis is a solid COLUMELLA (fig. 8*a*), in which case the shell is said to be imperforate. The line formed by the junction of two whorls is called the SUTURE (fig. 8*b*). The last turn of the shell is the BODY WHORL (fig. 8*b*), the others the spire (fig. 8*c*); the BASE is the opposite end to the APEX (fig. 8*d*) or point. The APERTURE, or mouth of the shell, is entire in most of the vegetable feeders, but NOTCHED or produced into a CANAL (fig. 8*f*) at the lower or ANTERIOR end in the carnivorous families. Sometimes there is a short POSTERIOR or upper canal (fig. 8*e*) near the suture. The outside of the aperture is formed by the outer or RIGHT LIP (fig. 8*g*), the inner by the inner or COLUMELLAR LIP. The right lip is often thickened, and when these thickenings are formed periodically they are called VARICES. Lines of sculpture or colour running from the apex to the aperture are termed SPIRAL, while those that coincide with the lines of growth are called TRANSVERSE. The aperture is often closed by a horny or calcareous plate, fixed to the foot of the animal, called the OPERCULUM.

In most of the Gasteropoda the body is unsymmetrical, and is coiled up spirally; it is enclosed in a MANTLE, which is not divided into two lobes. Locomotion is effected by means of a broad muscular disc called the FOOT. The head is generally distinct, and provided with two tentacles and two eyes, which are sometimes placed upon stalks. The mouth contains a long cartilaginous strap called the tongue, which is covered with teeth transversely arranged.

Lamellibranchiata (fig. 10).

The Lamellibranchiata have no head, and the body is protected by a bivalve shell, the valves being applied laterally to the animal. They are connected together at the DORSAL MARGIN by an elastic LIGAMENT, and articulate by a HINGE furnished with interlocking TEETH. The shell is closed by one (*Monomyaria*) or two (*Dimyaria*) powerful ADDUCTOR muscles, and the parts of the shell to which they are attached is always indicated by a scar (ADDUCTOR IMPRESSION), fig. 10*c*. The border of the mantle is also muscular, and the place of its attachment is marked by a line called the PALLIAL LINE (fig. 10*a*). The presence of a bay or sinus (PALLIAL SINUS), fig. 10*b*, in this line, shows that the animal had retractile siphons. The sinus, when present, and the ligament, are always on the POSTERIOR (fig. 10*f*) end of the shell. The apex of each valve is called the UMBO (fig. 10*d*) or BEAK, and is generally turned towards the ANTERIOR end (fig. 10*e*). The LENGTH of a bivalve is measured from its posterior to its anterior margin; the BREADTH from the dorsal to the ventral margin; and the THICKNESS from the outside of one valve to that of the other. In the Monomyaria the adductor impression is on the posterior side.

Bivalves are said to be CLOSE when the valves fit accurately, and GAPING when they cannot be completely shut; EQUIVALVE when the right and left valves are of the same size and shape, and EQUILATERAL when the umbones are placed in the centre. The surface is often ornamented by ribs which RADIATE from the umbones to the margin, or with CONCENTRIC ridges which coincide with the lines of growth. The LUNULE (fig. 10*g*) is an oval space in front of the beaks; when a similar impression exists behind the beaks, it is termed the ESCUTCHEON.

The LIGAMENT consists of two parts, the ligament proper and the CARTILAGE; they exist either combined or distinct, and sometimes one is developed and not the other. The external ligament is horny, and usually attached to ridges on the posterior hinge margin. The internal ligament or cartilage is generally lodged in pits along the hinge line. The central teeth of the hinge, just under the umbo, are called hinge or CARDINAL TEETH, those on each side LATERAL TEETH.

The body is surrounded by an integument called the MANTLE, which secretes the shell. In some species the margins of the mantle are united, and there are two holes for the inhaling and expulsion of water; the margins of these holes are often produced into long tubes or SIPHONS, which can usually be partly or completely retracted within the shell. These siphons are more especially characteristic of those shells that live buried in sand and protrude these tubes in order to obtain nourishment.

Brachiopoda (fig. 9).

The body of the Brachiopoda is also protected by a bivalve shell, but in this case the two valves are applied to the dorsal and ventral surfaces of the animal. The ventral valve is the larger and has a prominent beak, which is generally perforated by a FORAMEN (fig. 9*a*) for the passage of the peduncle by which the animal attaches itself to submarine objects; the dorsal or smaller valve is always free and imperforate. The mouth is furnished with two folded or spiral appendages, united by a membrane, and supported by an internal shelly skeleton (LOOP) on the dorsal valve. On the lower part of the beak of the ventral valve, just below the foramen, there is often a triangular space called the DELTIDIUM (fig. 9*b*).

The Brachiopoda are all inhabitants of the sea, and are often found in very deep water; they are always attached to stones, corals, &c., generally by the peduncle, but in the case of the Craniadæ, by their flattened lower valves. They are found in all latitudes.

Polyzoa (figs. 1, 2, 3, 4, and 6).

The Polyzoa always live in associated colonies made up of numerous CELLS, each inhabited by a separate zooid or POLYPIDE. This compound structure, which is called the POLYZOARIUM, is sometimes flexible, and either foliaceous or branching, when they are often mistaken for Hydrozoa; sometimes it is rigid, and either forms crusts over dead shells, stones, &c., or else assumes an erect form, which may be either foliaceous or branched, and in the latter case they are often mistaken for corals. The Polyzoa can, however, be distinguished from the Hydrozoa by the fact that in the former each polypide inhabits a separate cell that does not communicate with the others, while the latter are united by an interior organic connection; and from all known recent species of New Zealand corals they can be distinguished by the absence of the radiate septa which characterize that class.

In the sub-order Chielostomata, the orifice or mouth of the cell is often fitted with a semicircular lip or OPERCULUM (fig. 2) for closing it. This sub-order is also distinguished by the position and form of an organ termed the OVICELL, and by the occasional possession of other external organs called AVICULARIA and VIBRACULA. The OVICELL (fig. 6*b*) is generally in the form of a hood above or behind the cell. AVICULARIA may be of three kinds, the SESSILE (fig. 4), the IMMERSED (fig. 6*a*), and the PEDUNCULATE (fig. 3); but whatever its diversity of form, an avicularium always consists of two parts, viz., a moveable mandible and a cup furnished with a horny beak. VIBRACULA consist of a more or less elongated bristle, capable of being moved backwards and forwards.

The Polyzoa are found attached to seaweed, shells, &c.; most of them are inhabitants of the deep sea. A few species, however, live in fresh water lakes, or slowly running streams, attached to the under surfaces of stones, leaves, &c., or more rarely creeping slowly over the stems of aquatic plants.

Tunicata (fig. 5).

The Tunicata have no calcareous shell, but are enclosed in a tough leathery tunic. They are hollow and elastic, and have two orifices from which they squirt

water, when molested, with considerable force. The mouth, or ORAL APERTURE (fig. 5*a*), is usually situated above the anus, or ATRIAL APERTURE (fig. 5*b*), but in *Boltenia* the oral aperture is nearest to the stalk, but as the body is pendulous it becomes higher than the atrial aperture as usual among the Ascidians. The Tunicaries exhibit three types of structure, viz., the SOLITARY, the SOCIAL, and the COMPOUND. In the solitary Tunicaries each individual is always distinct; in the social Tunicaries the organism consists of a number of ZOOIDS permanently connected by means of a vascular canal, or STOLON, through which the blood circulates; in the compound Tunicaries the zooids become aggregated into a common mass, but there is no internal union.

Many of the Tunicata are found fixed to rocks, either between tide marks or always submerged, while others are oceanic in their habits.

For further information the student is referred to Woodward's *Manual of the Mollusca* (Weale, 1851), and to Johnston's *British Zoophytes* (Van Voorst, 1847).

The classification followed in this Catalogue is the same as that adopted by Dr. Chenu in his *Manuel de Conchyliologie* (Paris, Victor Masson, 1859), for the shells; and by Mr. Busk, in his Catalogue of the Marine Polyzoa in the British Museum, for the Polyzoa.

EXPLANATION OF PLATE.

Fig. 1. Diagram of a cyclostomatous polyzoon.

2. Diagram of a cheilostomatous polyzoon (after Busk).

3. Diagram of a pedunculate avicularium (after Busk).

4. Diagram of a sessile avicularium (after Busk).

5. Diagram of an ascidian (after Woodward).
   (*a.*) Oral aperture.
   (*b.*) Atrial aperture.

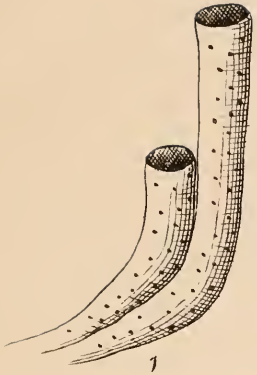
6. Diagram of a cheilostomatous polyzoon (after Busk).
   (*a.*) Immersed avicularium.
   (*b.*) Ovicell.

7. Back view of *Omnastrephes sloanii*. (No. 5, p. 3.)
   (*a.*) Tentacular arm.
   (*b.*) Suckers or cups.

8. *Triton acclivis*. (No. 33, p. 13.)
   (*a.*) Columella, or inner lip.
   (*b.*) Body whorl.
   (*c.*) Spire.
   (*d.*) Apex.
   (*e.*) Posterior canal.
   (*f.*) Anterior canal.
   (*g.*) Outer or right lip.
   (*h.*) Suture.

9. Dorsal view of *Terebratella cruenta*. (No. 2, p. 85.)
   (*a.*) Foramen.
   (*b.*) Deltidium.

10. Interior view of right valve of *Chione stuchburyi*. (No. 62, p. 70.)
    (*a.*) Pallial line.
    (*b.*) Pallial sinus.
    (*c.*) Adductor impressions.
    (*d.*) Umbo.
    (*e.*) Anterior end.
    (*f.*) Posterior end.
    (*g.*) Lunule.



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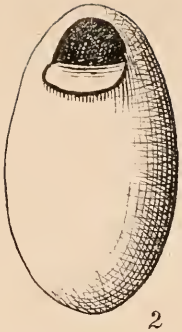

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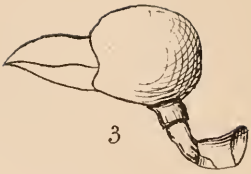

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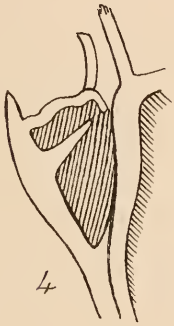

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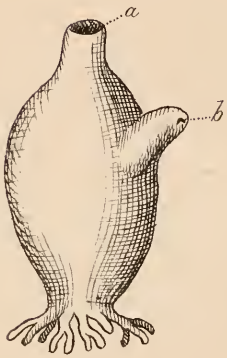

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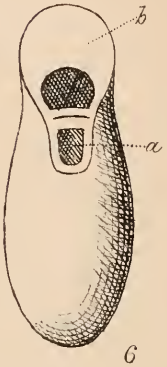

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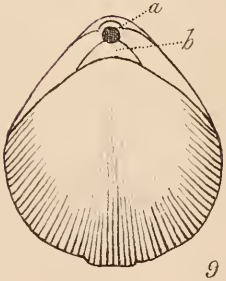

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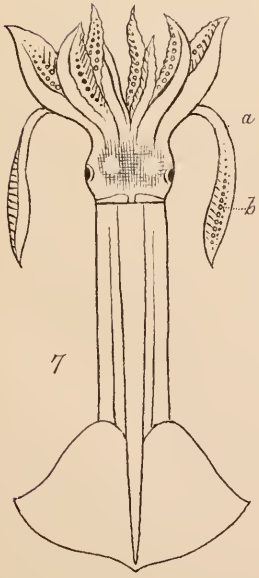

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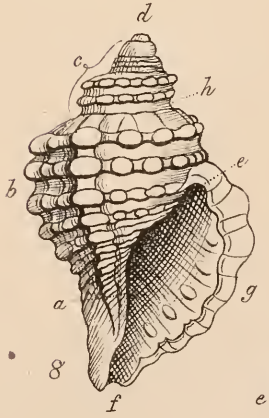

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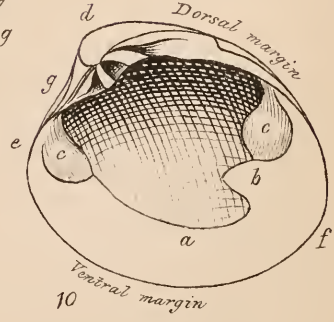

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KEY TO THE FAMILIES.

(ADAPTED TO THE NEW ZEALAND GENERA.)

Class—Cephalopoda.

Arms forming a circle round the head.

(*a.*) Arms eight. Page

OCTOPIDÆ.—Naked; arms similar 1

ARGONAUTIDÆ.—In a shell, one pair of arms webbed at the extremity ... 2

(*b.*) Arms ten.

ONYCHOTEUTHIDÆ.—Eyes naked, interior shell horny 2

LOLIGIDÆ.—Eyes covered with skin, interior shell horny 3

SEPIADÆ.—Interior shell calcareous 4

SPIRULIDÆ.—Interior shell spiral 4

(*c.*) Arms numerous.

NAUTILIDÆ.—With an external spiral shell 5

Class—Pteropoda.

Fins on the side of the mouth or head.

HYALIDÆ.—Covered with a thin horny shell 5

DENTALIIDÆ.—Shell tubular 5

Class—Heteropoda.

Foot formed into a raft.

IANTHINÆ.—Enclosed in a spiral shell 6

FIROLIDÆ.—Shell limpet-shaped 6

Class—Gasteropoda.

Shell univalve, multivalve, or none.

1. Shell regularly spiral.

(*a.*) *Shell fusiform, tapering to each end.*

MURICIDÆ.—Anterior canal straight; aperture entire behind ... 7

TRITONIDÆ.—Large, canal short, with few varices 12

BUCCINIDÆ.—Shell notched in front 14

PURPURIDÆ.—Columella flattened, last whorl large 16

STROMBIDÆ (part).—Columella curved to the right 14

CANCELLARIDÆ.—Columella plicated 25

TRICHOTROPIDÆ.—Shell thin, keeled 26

(*b.*) Shell convolute, the aperture nearly as long as the shell.

* Spire moderate. Page

OLIVIDÆ.—Spire covered with enamel 17
VOLUTIDÆ (part).—Aperture notched in front, columella plaited 18
COLUMBELLIDÆ.—Longitudinally plicated, columella plaited ... 19
TORNATELLIDÆ.—Aperture rounded in front, columella plaited ... 51
AURICULIDÆ.—Spire short, aperture rounded in front, columella plaited, estuarine 56

* * Spire very short.

CASSIDÆ.—Aperture with a short recurved canal 20
DOLIDÆ.—Aperture large, without canal 20
CONIDÆ.—Shell inversely conical 23
STROMBIDÆ (part).—Aperture deeply notched near the anterior canal 23
APLUSTRIDÆ.—Shell thin, swollen 52

* * * Spire none.

VOLUTIDÆ (part).—Aperture notched in front, columella plaited 18
CYPRÆIDÆ.—Oval, aperture narrow 24
CYLICHNIDÆ.—Small, cylindrical 52
BULLIDÆ.—Moderate or large, inflated 52
PHILINIDÆ.—Small, last whorl much expanded 53

(*c.*) Shell turreted or elongate.

PLEUROTOMIDÆ.—Outer lip indented near the suture, canal long and straight 11
SCALARIDÆ.—Whorls ribbed, sutures deep 21
PYRAMELLIDÆ.—Small, aperture entire; columella sometimes plaited 22
CERITHIIDÆ.—Aperture channelled in front 26
RISSOIDÆ.—Small, aperture entire, columella smooth 28
TURRITELLIDÆ.—Spirally striated, aperture rounded 29

(*d.*) Shell globular.

NATICIDÆ.—Spire small, polished, aperture semicircular 21
LITTORINIDÆ.—Aperture rounded, never pearly, shell turbinated ... 27
NERITIDÆ.—Spire small, aperture semicircular, columella expanded, operculum shelly 33
TROCHIDÆ (part).—Turbinated, pearly inside 33
AMPULLACERIDÆ.—Estuarine; whorls flattened 58

(*e.*) Shell depressed or ear-shaped.

VELUTINIDÆ.—Shell entire 21
CALYPTRÆIDÆ (part).—Interior with a shelly process 31
HALIOTIDÆ.—Shell perforated with holes 40

(*f.*) Trochiform, conical, with a flat base.

ONUSTIDÆ.—Shell depressed, operculum horny, nucleus lateral ... 31
TROCHIDÆ (part).—Shell pointed, operculum horny or shelly, nucleus central 33

(*g.*) Naviculate or boat-shaped.

CALYPTRÆIDÆ (part).—Interior with a shelly process 31

2. Shell irregularly spiral.

VERMETIDÆ.—Aperture round, entire 30
SILIQUARIIDÆ.—Tube with a longitudinal slit 30

4. Shell flat or conical.

PILEOPSIDÆ.—Conical, curved 32
FISSURELLIDÆ.—Anterior margin notched, or apex perforated ... 42
TECTURIDÆ.—Depressed, thin, apex sub-marginal 43
PATELLIDÆ.—Conical or depressed, apex central or sub-central ... 43
APLYSIIDÆ.—Small, trigonal, translucent 53
SIPHONARIIDÆ.—Conical or depressed; muscular impression divided by a groove on the right side 55

5. Shell multivalve.

CHITONIDÆ.—Shell composed of eight transverse valves 46

7. Shell none.

Page
DORIDÆ.—Gills exposed, arranged round the vent 53
ÆOLIDÆ.—Gills exposed, arranged on each side 54
ONCHIDIIDÆ.—Marine, gills not exposed 54

Class—Lamellibranchiata.

Shell composed of two valves.

1. Pallial line sinuated.

(*a.*) Ligament none.

PHOLADIDÆ.—Hinge with accessory plates 58

(*b.*) Ligament external.

GLYCIMERIDÆ.—Equivalve, thick, gaping 60
TELLINIDÆ (part).—Compressed, slightly gaping, thin 65
VENERIDÆ.—Equivalve, three diverging cardinal teeth in each valve 69
PETRICOLIDÆ.—Elongate, thin, gaping at both ends 73

(*c.*) Ligament internal.

CORBULIDÆ.—Small, thick, produced behind 60
ANATINIDÆ.—Pearly inside, cartilage with a free ossicle 61
MACTRIDÆ.—Trigonal, ligament in a deep triangular pit, two diverging cardinal teeth 62
TELLINIDÆ (part).—Thick, ligament in a deep triangular pit, one small cardinal tooth 65

2. Pallial line simple.

(*a.*) Ligament external.

CARDIIDÆ.—Swollen, posterior end unlike the rest 73
ISOCARDIIDÆ.—Radiating nodulous ribs 74
LUCINIDÆ.—Sub-orbicular, two cardinal teeth in each valve, and two laterals 74
UNGULINIDÆ.—Sub-orbicular, two cardinal teeth in each valve, but no laterals 75
SOLEMYADÆ.—Covered with a long skin 76

(*b.*) Ligament internal.

* Two adductor impressions.

ERYCINIDÆ.—Small, thin; one or two cardinal teeth and laterals 75
CRASSATELLIDÆ.—Thick, sub-trigonal, two anterior lateral teeth in each valve 76
MYTILIDÆ.—Umbones anterior, shell closed 77
AVICULIDÆ.—Umbones anterior, shell gaping 79
ARCIDÆ.—Hinge with many teeth in a line, not pearly inside ... 79
NUCULIDÆ.—Hinge with many teeth in a line, pearly inside ... 80

** One adductor impression.

PECTINIDÆ.—Shell eared 81
ANOMIIDÆ.—Inequivalve, lower valve with a hole or notch near the summit 83
OSTREIDÆ.—Inequivalve, lower valve entire 84

Class—Brachiopoda.

Enclosed in a bivalve shell.

(*a.*) Lower valve with an interior shelly plate.

TEREBRATULIDÆ.—Shell minutely punctate 85
RHYNCHONELLIDÆ.—Shell not punctate 87

(*b.*) Lower valve without any shelly plate.

CRANIADÆ.—Ventral valve attached 87

Class—Polyzoa.

Aggregated together in shelly or horny cases.

(*a.*) Cells more or less ovoid; mouth less than the diameter of the cell. (Figs. 2 and 6.)

1. Polyzoarium of distinct pieces connected by flexible joints. Page

CATENICELLIDÆ.—Cells in a single series 88
CELLULARIIDÆ.—Cells in a double series 89
SALICORNARIIDÆ.—Cells disposed round an imaginary axis ... 90

2. Polyzoarium continuous throughout.

* Flexible, never adnate.

SCRUPARIADÆ.—Cells in a single series 91
CABEREIDÆ.—Branched; cells in the same plane; furnished with bristles 91
BICELLARIIDÆ.—Branched; cells in the same plane; no bristles 92
FARCIMINARIIDÆ.—Branched; cells disposed round an imaginary axis 94
GEMELLARIIDÆ.—Branched; cells in pairs 95
FLUSTRIDÆ.—Foliaceous, entire or lobed 93

** Rigid, adnate or erect.

MEMBRANIPORIDÆ.—Crustaceous, spreading 95
CELLEPORIDÆ.—Massive; cells sub-erect and confusedly heaped 98
ESCHARIDÆ.—Erect; fixed 99

(*b.*) Cells tubular; mouth of the same diameter as the cell. (Fig. 1.)

1. Marine.

CRISIIDÆ.—Branched, more or less flexible 100
IDMONEIDÆ.—Erect, branched 101
TUBULIPORIDÆ.—Adnate, divided into lobes 103
DIASTOPORIDÆ.—Discoid, sessile or pedunculate 103

2. Freshwater.

PLUMATELLIDÆ.—Adnate, branched 104

Class—Tunicata.

Enclosed in a leathery skin.

(*a.*) Animal fixed.

ASCIDIADÆ.—Animal simple 104
BOTRYLLIDÆ.—Animal compound 105

(*b.*) Animal free, floating.

PYROSOMIDÆ.—Animal compound 105
SALPIDÆ.—Animal simple, sometimes aggregated 106

MARINE MOLLUSCA OF NEW ZEALAND.

An asterisk * prefixed to a species, means that I have seen no New Zealand specimens.

Class—Cephalopoda.

Head large, separate from the body. Eyes large, lateral. Ears developed. Mouth with two horny or shelly jaws with fleshy lips, and surrounded by eight or ten fleshy arms, or numerous tentacles; furnished with an entire or slit tube, or siphuncle, used in locomotion.

Order—Octopoda.

Body short, rounded; head large; eyes fixed; arms eight, all sessile; no internal dorsal shell.

Family—Octopidæ.

Body naked; arms tapering, with short sessile cups.

OCTOPUS.

Arms with two rows of cups; body round, without fins.

All tropical and temperate seas.

* 1. **O. lunulatus,** *Quoy, Voy. Astrolabe,* ii., *p.* 86, *t.* 6, *f.* 1, 2; *Gray, Cat. Moll., Brit. Mus., Cephalopoda, p.* 11. Body short, covered with scattered tubercles, and about twenty round prominent circles with concave centres, in six series. Head short, thick, tubercular, with one medial and two lateral convex circles, with a tubercle in the centre. Arms short, conical, nearly equal; order of their length, 4, 3, 2, 1, with a circle between the bases of the arms. Cups about fifty. Web very short. When alive white, varied with blue circular spots paler in the centre.—(*Gray.*)

PINNOCTOPUS.

Body oblong, with broad, lateral, wing-like expansions, which extend in front and enfold all the body; arms very long, with two rows of slightly prominent cups.

New Zealand only.

* 2. **P. cordiformis,** *Quoy, l.c.,* ii., *p.* 27, *t.* 6, *f.* 2. Body orbicular, tubercular, winged. Arms nearly equal in length, the lateral ones shortest. Eyes rather prominent. Reddish brown; arms with pale blue lunules.

FAMILY—ARGONAUTIDÆ.

Body covered with a thin shell; arms tapering, very unequal; cups prominent, in two series.

ARGONAUTA.

Shell one-celled, thin, transparent.

All tropical and sub-tropical seas.

3. **A. nodosa,** *Solander; Gray, l.c., p.* 32. Shell compressed, sides with transverse plications, which are longitudinally tuberculiferous; keels two, with compressed tubercles. White, brownish on the spire, where also the keel tubercles are blackish brown. Five or six inches across.

North Island, sometimes as far south as Wellington. Indian Sea. South Pacific. Chili.

Animal.—Body oblong, rounded behind, smooth, spotted with violet; eyes large, prominent; siphuncle united to the base of the arms by a lateral membrane; arms tapering, except the dorsal pair, which are palmate at the end, these are the shortest, the next pair to them the longest, and the others graduated; the lowest pair are keeled on the outside; membrane small, all the arms equally webbed; cups large, less than their own diameter apart, in two rows, with a single row of rather smaller cups round the mouth.

Chatham Islands. As the shell of this animal was not obtained, I refer it doubtfully to this species, as it differs from Dr. Gray's description.

ORDER—DECAPODA.

Body oblong or cylindrical; head smaller than the body; eyes free in the orbit; arms ten,—eight sessile, two tentacular, elongated; fins developed; an internal shell, occupying the middle of the back.

FAMILY—ONYCHOTEUTHIDÆ.

Fins posterior, dorsal, angular; eyes naked; ears with a longitudinal crest; shell horny, lanceolate.

ONYCHOTEUTHIS.

Fins terminal, broad, together rhomboidal; sessile arms angular, cups in two alternating lines; tentacular arms with a rounded group of small sessile cups, and two series of claw-like hooks on each club. Shell lanceolate, pennate, tip acute; end produced, narrow; sides dilated, thin, with a central longitudinal keel contracted at the end.

Atlantic and Indian Oceans.

*4. **O. bartlingii,** *Le Sueur; Gray, l.c., p.* 54. Body elongate; back with a central transparent line over the keel of the shell; sessile arms slender; tentacular arms with six large hooks. Shell dark brown, with a short central keel above and a ridge beneath.

Indian Ocean

OMMASTREPHES.

Fins terminal, broad, together rhomboidal; sessile arms subulate; tentacular arms scarcely enlarged at the end, both they and the sessile

arms with cups and horny rings. Shell horny, flexible, narrow, gradually wider above, terminated by an expansion that forms a conical cavity: a central and two marginal ribs.

All seas.

5. **O. sloanii,** *Gray, l.c., p.* 61. Body cylindrical; fin rather more than one-third the length of the body; sessile arms compressed, cups equal, oblique, in two rows, higher side of rings with acute teeth, lower smooth; tentacular arms slightly keeled externally, cups of lower part small, in two rows, of middle part in four rows; rings with distant teeth all round. Colour purplish, caused by minute dots placed close together; beak black.

Bluff; Cook's Strait; Auckland. Indian Ocean.

FAMILY—LOLIGIDÆ.

Fins either posterior or lateral; eyes covered with skin; ears with a transverse ridge; shell horny, lanceolate, pennate, or spathulate.

LOLIGO.

Fins posterior, dorsal, rhombic; cups of sessile arms in two rows, lateral membranes with cups on the angles; clubs with four or more rows of cups. Shell pennate, narrow above, and with a central longitudinal keeled ridge, forming a gutter within, edge thin.

All seas.

6. **L. australis,** *Gray, l.c., p.* 71. Body oblong sub-cylindrical; fins rhombic, half the length of the body; tentacular arms with four rows of cups. Shell broad, lanceolate, blackish brown, upper end rather broad.

A dried specimen is in the Auckland Museum.

Australia.

SEPIOTEUTHIS.

Fins extending the whole length of the back; sessile arms unequal, with two rows of cups; tentacular arms long, club enlarged, cups in four rows. Shell pennate, lanceolate, narrow in front and with a central keel.

West Indies. Cape of Good Hope. Red Sea. Java. Australia.

* 7. **S. lessoniana,** *Féruss; Gray, l.c., p.* 80. Body elongate, spotted with violet; fins dilated posteriorly; sessile arms elongate, cups oblique, rings with distant acute teeth; tentacular arms bluntly clubbed, cups large, very oblique, rings with distant acute curved teeth; buccal membrane with cups. Shell lanceolate, broadest in the middle, outer edge not thickened, central rib broad, extended in front, one-fifth the length.

New Guinea.

8. **S. major,** *Gray, l.c., p.* 83. Body cylindrical, attenuated behind; fins rounded, fleshy, most dilated in the middle of the body; buccal membrane without cups; sessile arms rather short, order of length, 4, 3, 2, 1, cups large, rings with short blunt teeth on the higher side; tentacular arms strong, with cups and rings like those of the

sessile arms. Shell lanceolate, widest at about two-fifths of its length, edge not thickened, central rib broad, extended in front about one-sixth of its length. Yellowish white, spotted with violet; length of body sometimes 13 inches, perhaps more.

Common.

There is nothing in Dr. Gray's description of *S. major* in his catalogue of Cephalopoda that does not answer for this species, but the description is too short to feel confidence in the identification.

Cape of Good Hope.

FAMILY—SEPIADÆ.

Shell calcareous, with a hard back; body short, oval or rounded; fins lateral, as long as the back, separated from one another by a free space; sessile arms with four rows of cups.

SEPIA.

Body large; fins narrow; head large, wider than long; eyes with an inferior eyelid; sessile arms short, strong; tentacular arms long, slender, terminal club large. Shell ovate or oblong, externally convex with a horny edge and an acute tip; the cavity filled with layers of a cellular, calcareous substance.

World-wide.

9. **S. apama,** *Gray, l.c., p.* 103. Cuttle-fish.

Animal.—? Shell oblong, posterior part produced, acute, with a callosity at the posterior edge of the cavity; apex blunt, rugose; anterior extremity rounded, covered with a strong cartilaginous side; central portion rather convex.

A single mutilated shell.

Australia.

FAMILY—SPIRULIDÆ.

Body sub-cylindrical; eyes covered with skin, and with a lower eyelid. Shell calcareous, internal, spiral, chambered, chamber traversed by a ventral siphon.

SPIRULA.

Body oblong; fins two, small; sessile arms with numerous cups; tentacular arms long. Shell thin, involute in the same plane, whorls separated from each other, septa concave outwards, with a funnel-shaped siphon on the inner side.

All warm seas.

10. **S. lævis,** *Lituus lævis; Gray, l.c., p.* 116. *Spirula australis, Owen. Voy. Samarang, Mollusca, p.* 13; *not of Lamark.* Posterior part of the body furnished with a disc, covering and concealing the shell, and with semicircular fin-like appendages on each side; mantle smooth. Shell white, semi-transparent.

Abundant.

ORDER—TETRABRANCHIATA.

Body protected by an external shell, to which it is attached; eyes pedunceled; arms very numerous, retractile. Shell chambered and siphuncled.

FAMILY—NAUTILIDÆ.

Shell spiral or straight; body chamber large; siphon central or sub-central.

NAUTILUS.

Shell involute or discoidal, few whorled; septa straight or sinuated; siphon central.

Chinese Seas. Indian Ocean.

11. **N. pompilius,** *Lamark*, xi., *p.* 321. Shell white, with fawn-coloured transverse chevroned bands; coated internally with mother of pearl. Large.

Tauranga. Broken specimens are occasionally picked up on the coast. Indian and Pacific Oceans.

Class—Pteropoda.

Head more or less distinct; eyes none; mouth often furnished with cup-shaped appendages; fins on the sides of the mouth or neck. Body ovate or roundish, often enclosed in a thin translucent shell.

Animal free, floating on the surface of the sea.

FAMILY—HYALIDÆ.

Body enclosed in an elongate or globular thin shell; head not distinct; fins two, large; gills internal.

HYALEA.

Shell globular, translucent; mouth narrower than the cavity, with a lateral slit on each side; dorsal plate produced into a hood; posterior extremity tridentate.

Atlantic. Mediterranean. Indian Ocean.

1. **H. affinis,** *D'Orb; Cavolina affinis, Gray, Cat. Ptr., Brit. Mus., p.* 7. Shell inflated in front, flattish behind, broader than high, finely transversely striated on the upper anterior portion, almost smooth below and on the back; posteriorly three spined, the lateral ones short, the middle one slightly reflexed; dorsal lip produced, with three broad rounded ribs, which run along the back towards the median spine. Brownish.

Chatham Islands.

FAMILY—DENTALIIDÆ.

Shell tubular, calcareous, symmetrical, open at each end, attenuated posteriorly, smooth or longitudinally striated; aperture circular, not constricted.

DENTALIUM.

Posterior opening entire.

Widely spread.

2. **D. pacificum,** *sp. nov.* Solid, tapering, slightly curved,

longitudinally grooved; grooves unequal, about thirty at the anterior end, but diminishing in number towards the apex.—White.

Length, 2·4; breadth, anterior end, ·3, posterior end, ·05.

Class—Heteropoda.

Foot compressed into a vertical muscular lamina, which is used as a fin, or converted into a raft-like apparatus.

Animal free swimming.

Family—Ianthinæ.

Body enclosed in a shell, foot formed into a vesicular raft, which the animal can inflate at pleasure, but which cannot be withdrawn into the shell.

IANTHINA.

Shell thin, translucent, spiral; whorls few, rather ventricose; aperture four-sided; lip thin, notched at the outer angle.

Atlantic and Pacific Oceans.

1. **I. exigua,** *Lamark; Ianthina exigua, Lamark, Anim. sans vert.*, ix., *p.* 5. Whorls four, convex, rather deeply obliquely striated; mouth large; columella straight, long; outer lip deeply notched. Violet, with a whitish spiral band on the posterior margin of the whorls. Length, 0·4; breadth, 0·4; angle of spire, 85°.

Abundant on exposed sandy coasts.

2. **I. ianthina,** *Linnæus; Ianthina communis, Lamark, l.c.*, ix., *p.* 4. Whorls four, convex, finely obliquely striated; spire depressed; mouth large; columella rather short, twisted to the right. Violet, getting whitish on the spire. Length, 0·65; breadth, 0·82; angle of spire, 107°. Larger than the last, and not nearly so common.

N. America.

Family—Firolidæ.

Animal cylindrical, translucent, furnished with ventral and tail fins for swimming; gills exposed on the posterior part of the back, or covered by a small hyaline shell.

CARINARIA.

Animal large, translucent, granulated, ventral fin rounded; tail large, compressed; gills numerous, pinnate, projecting from beneath the shell, which is limpet-shaped, with a posterior sub-spiral apex, and a fimbriated dorsal keel; nucleus minute, dextrally spiral.

Warmer parts of the Atlantic and Indian Oceans.

* 3. **C. australis,** *Quoy, Voy. Astrolabe, p.* 394. Shell thin, hyaline, transversely sulcated, apex obliquely inclined; keel undulated; spire obtuse, on the right towards the whorls four elongated oval apertures. Swimming foot extended, quadrilateral.—(*Quoy.*)

NATURAL HISTORY.

Class—Gasteropoda.

Head distinct, with eyes and tentacles; body usually protected by a conical more or less spiral shell, often furnished with an operculum.

ORDER—PECTINIBRANCHIATA.

Gills comb-like, formed of one, or sometimes two, longitudinal series of laminæ on the left side of the mantle over the back of the neck. Animal unisexual. Shell spiral; operculum usually distinct.

Sub-order—Proboscidifera.

Head small; proboscis long, retractile; tentacles close together at the base, or united by a membrane over the base of the proboscis; eyes sessile, on the external base of the tentacles. Carnivorous.

FAMILY—MURICIDÆ.

Tentacles moderate; mantle enclosed; shell spiral, turreted; anterior canal produced; pillar smooth; aperture entire behind; operculum horny, annular; nucleus apical or sub-apical.

Sub-family—Muricinæ.

Shell thick, with three or more varices, with more or less prominent spines. Operculum ovate; nucleus apical.

MUREX.

Shell ovate; spire rather short, with three or more rounded or spinose varices on each whorl; aperture ovate, often small; canal elongate, straight or bent, tubular, generally spinose; operculum horny.

World-wide.

1. **M. zealandicus,** *Quoy, Voy. Astrolabe,* ii., *p.* 531; *Gray, Dieff. N.Z.,* ii., *p.* 229. Shell globose, rather thin; whorls angulated; varices on the spire whorls with a single spine, those on the body whorl with five or six half-closed hollow spines, the posterior one being considerably the longest. These spines are bent slightly backwards, and more strongly to the left. Spire produced, acute; aperture ovate; canal produced, half-closed, bent backwards; spinose with the remains of the old beaks. Yellowish or pinkish white; interior white. Length, 2 inches; breadth, 1·0 inch; angle of spire, 53°.

North Island, as far South as Wellington.

2. **M. lyratus,** *Lamark, l.c.,* ix., *p.* 598; *not of Gml.* Fusiform, rather thin, spire produced, body whorl rather inflated; spire whorl with two, and body whorl with about six distant spiral ridges, crossed by thin varices at equal distances, dividing the shell into squares, depressions smooth, varices often produced into short spines where they cross the ribs; aperture ovate, angled, outer lip wrinkled; canal produced, open, nearly straight. White; young with a few purple bands on the inside. Length, 1·25; breadth, ·6; angle of spire, 50°.

Stewart's Island.

3. **M. octogonus,** *Quoy, l.c.,* ii., *p.* 531; *Gray, l.c., p.* 229. Whorls spirally grooved; varices eight or nine, each carrying two or

three spines on the spire whorls, and seven to thirteen on the body whorl; spines strongly recurved; spire produced; aperture ovate; outer lip grooved; canal produced, nearly closed, slightly recurved, spinose with the remains of the old beaks. Reddish white, ribs reddish brown, often stained olivaceous brown, interior white, tinted with violet. Length, 2·25; breadth, 1; angle of spire, 45°.

Kapiti, Cook Strait.

4. **M.** (**Pteronotus**) **eos,** *sp. nov.* Small; whorls six, with a sub-nodular keel; body whorl with shallow spiral grooves; varices three, forming continuous wings, crisped on the inside, and with an obsolete posterior spine on each whorl; aperture ovate; canal rather short, straight, half closed. Bright yellowish pink, paler inside. Length, 1; breadth, 0·4; angle of spire, 42°.

Bay of Islands.

FUSUS.

Shell fusiform, spire generally long, many-whorled; aperture oval; canal long and straight; columella smooth; operculum horny, ovate, curved, nucleus apical.

World-wide.

5. **F. pensum,** *sp. nov.* Fusiform, much elongated, smooth; whorls ten, sub-carinated, spirally grooved; keel sub-nodulose, suture very deep; aperture broadly ovate, almost round, suddenly narrowed into the canal, which is much produced, narrow, quite straight, and as long as the spire. White or brownish. Length, 2·85; breadth, 0·85; angle of spire, 32°.

Kapiti, Cook Strait.

6. **F. australis,** *Quoy, Voy. Astrolabe,* ii., *p.* 495. Fusiform, elongated; whorls rather flattened, spirally striated, those of the spire transversely ribbed; body whorl rather ventricose; outer lip crenulated, with a short posterior canal; anterior canal long, nearly straight. Reddish brown. Length, 2·2; breadth, ·8; angle of spire, 35°.

Collingwood.

7. **F. zealandicus,** *Quoy, l.c.,* ii., 500; *F. caudatus, Quoy, l.c.,* ii., *p.* 503. Fusiform, elongated; whorls rounded, deeply spirally grooved, each of the grooves generally with a single elevated line, sometimes with two lines in a groove; upper whorls only of spire transversely ribbed; outer lip crenulated; canal produced. Reddish brown, the reliefs darker. Length, 5; breadth, 2·25; angle of spire, 45°.

8. **F. mandarinus,** *Duclos, Mag. de Zool., pl.* 8. Fusiform, elongated; whorls rounded, spirally grooved; each of the grooves with one or two elevated lines; spire whorls slightly, and body whorl strongly, transversely ribbed; outer lip crenulated; canal rather produced. Pale brownish, reliefs darker. Length, 3·25; breadth, 1·55; angle of spire, 48°.

Collingwood. Probably a variety of the last.

9. **F. dilatatus,** *Quoy, l.c.,* ii, *p.* 498. Ovato-fusiform; whorls carinated, spirally striated, with a row of tubercles on the keel;

aperture large, outer lip angled; canal produced. Yellowish, minutely and closely spirally striped with reddish brown. Length, 5·25; breadth, 2·35; angle of spire, 50°.

Common.

10. **F. varius**, *Lamark, l.c.*, ix., *p.* 457. Fusiform, rather thick; spire whorls with two, and body whorl with many, spiral ridges, crossed by varices; between the spiral ridges on the body whorl there are one, two, or three smaller raised lines; aperture ovate; outer lip finely crenulated; canal produced, bent to the left and recurved. White or yellowish white, inside pinkish brown; in the young the mouth is internally banded with pale purple. Length, 2·4; breadth, 1·2; angle of spire, 50°.

Variable, the varices being sometimes wanting on the body whorl.

Port Pegasus, Stewart's Island. Found also in Australia.

11. **F. stangeri**, *Gray, Dieff. N.Z.*, ii., *p.* 230. Small, ovato-fusiform, rather thin; spire whorls with two, and body whorls with about eight, spiral ridges, crossed by thin varices, which are often worn down into rounded ribs; between the spiral ridges there are one, or sometimes two, smaller raised lines; the whole shell closely transversely striated; aperture ovate, angled behind; outer lip wrinkled; canal short, bent to the left. Reddish or purplish brown, mouth often internally banded with purple. Length, 1·; breadth, ·55; angle of spire, 55°.

12. **F. traversi**, *sp. nov.* Ovato-fusiform; spire whorl and posterior portion of body whorl longitudinally ribbed, ten ribs in a whorl; aperture oval; canal short, bent slightly to the left; lips smooth. White, with thin brown spiral stripes, ten or twelve on the body whorl; interior white, with two brown interrupted bands on the outer lip. Length, 1·1; breadth, ·58; angle of spire, 50°.

The young shell is white and semi-translucent.

Chatham Islands only.

13. **F. corticatus**, *sp. nov.* Small, fusiform, thick; whorls finely spirally grooved, and strongly transversely ribbed, about eleven ribs in the body whorl; aperture oval; outer lip grooved in the adult; canal short, slightly bent to the left. Yellowish white, with thin spiral stripes of purplish black, but the colours always obscured by a thick coralline growth; interior white, banded on the outer lip. Length, ·75; breadth, ·37; angle of spire, 45°.

Auckland.

14. **F. plebeius**, *sp. nov.* Small, fusiform, whorls convex, spirally grooved, and finely transversely plaited; aperture oval, slightly angled; outer lip grooved in the adult; canal short, slightly bent to the left. Purplish, the reliefs darker and browner; inside brownish purple. Length, ·8; breadth, ·4; angle of spire, 32°.

Common.

15. **F. inferus**, *sp. nov.* Small, ovato-fusiform, whorls spirally grooved and transversely plicated; aperture broadly ovate, angled posteriorly; outer lip crenulated; canal very short, bent to the left.

Purplish brown; inside brownish purple. Length, 1·1; breadth, ·7; angle of spire, 46°.

Stewart's Island.

Considerably broader than the last, the transverse plications more irregular, and the canal shorter.

16. **F. lineatus,** *Quoy, Voy. Astrolabe*, ii., *p.* 501; *Pollia linea, Gray, Dieff. N.Z.*, ii., *p.* 229, *not F. lineatus, Reeve.* Fusiform, smooth, apex only ribbed; whorls flattened, very finely spirally striated; aperture oval; outer lip smooth; canal short, slightly bent to the left. Purple, spirally banded with reddish brown; interior purplish brown. Length, ·86; breadth, ·4; angle of spire, 40°.

Common.

17. **F. linea,** *Martyn; Buccinum linea, Martyn, Univ. Conch., pl.* 48; *Fusus linea, Deshayes, Anim. sans vert.*, ix, *p.* 476; *Fusus lineatus, Reeve; Pollia lineolata, Gray, Dieff. N.Z.*, ii., *p.* 230. Fusiform, smooth, apex sometimes ribbed; whorls flattened; aperture oval; outer lip grooved; canal short, slightly bent to the left. Purplish or pale reddish brown, spirally banded with purplish black or reddish brown Length, 1·4; breadth, ·65; angle of spire, 48°.

Common. Chatham Islands.

18. **F. littorinoides,** *Reeve.* Small, fusiform, spire produced, acute; whorls rather distantly spirally striated, with several very fine striæ between; spire whorls transversely ribbed; aperture oval, outer lip slightly grooved, with a thin margin; canal short, nearly straight. Purplish brown, or pale brown. Length, ·7; breadth, ·3; angle of spire, 36°.

Common.

19. **F. duodecimus,** *Gray, Dieff. N.Z.*, ii., *p.* 230. Small, ovato-fusiform, transversely ribbed, and distantly spirally striated; spire acute, whorls seven, convex; body whorl about half the length of the shells, with twelve transverse rounded ribs; aperture oval, canal short, open. Pale brown or white. Length, ·45; breadth, ·22; angle of spire, 37°.

Common.

20. **F. bicinctus,** *sp. nov.* Fusiform; smooth; slightly transversely ribbed at the apex only; whorls rather flattened, faintly transversely striated; aperture oval; outer lip smooth; canal very short, bent slightly to the left. White, with a band of purple on the anterior portion of the spire whorls extending to the sutures, and two similar bands on the body whorl. Length, 1·1; breadth, ·55; angle of spire, 37°.

Chatham Islands only.

21. **F. vittatus,** *Quoy, l.c.*, ii., *p.* 404. Fusiform; whorls slightly spirally grooved and transversely ribbed; aperture oval; outer lip toothed; canal very short, a callosity in the posterior angle of the aperture. White, with a reddish brown band on the anterior portion of the spire whorls, extending to the sutures, and two similar bands on the body whorl. Length, ·5; breadth, ·32; angle of spire, 45°.

Omaha beach.

22. **F. triton,** *Lesson; Buccinum triton, Lesson, Rev. Zool.*, 1841, 37. Fusiform; whorls spirally striated, those of the spire carinated, and crossed by low transverse ribs; keel sub-nodulose; body whorl convex, transverse ribs and sub-nodulose keel nearly obsolete; aperture oval, not angled behind; outer lip slightly crenulated; canal short, bent to the left, slightly notched anteriorly. Brownish or yellowish, sometimes obscurely longitudinally streaked with brownish purple; interior white. Length, 2·35; breadth, 1·25; angle of spire, 55°.

Common. Chatham Islands.

This species is larger than the next; the outer lip is rounded, and it never has two rows of nodules on the body whorl; but I believe that one is only a variety of the other.

23. **F. nodosus,** *Martyn; Buccinum raphanus, Quoy, l.c.*, ii., *p.* 428; *F. raphanus, Lamark, l.c.*, ix., *p.* 454. Fusiform, ventricose; whorls spirally striated, those of the spire carinated, and crossed by low transverse ribs; keel nodulose; body whorl bicarinated, each keel with a row of nodules, sometimes obsolete on the anterior one; aperture oval, angled behind; outer lip slightly crenulated; canal short, bent to the left, slightly notched anteriorly. From yellowish white, longitudinally streaked with brownish purple, to brownish purple; interior white. Length, 1·65; breadth, 1·0; angle of spire, 55°.

Abundant; Friendly Islands.

Var. B.—Body whorl with twelve nodular transverse ribs, which do not reach to the suture; small.

Cook Strait.

FAMILY—PLEUROTOMIDÆ.

Mouth exposed; tentacles close together; mantle enclosed; shell turreted, fusiform; canal elongated, outer lip with a notch or groove.

PLEUROTOMA.

Outer lip with a fissure near the suture; operculum ovate-lanceolate, flat; front side straight; nucleus apical.

World-wide.

24. **P. (Drillia) novæ zealandiæ,** *Reeve; P. rosea, Quoy, l.c.*, ii., *p.* 524; *not of Sowerby.* Spire acute, whorls flattened, spirally striated, those of the spire transversely finely ribbed; ribs interrupted in the middle, those on the anterior part of the whorls oblique; body whorl finely spirally and transversely striated; sub-nodulose near the suture; aperture oblong, canal short; body whorl rather longer than the spire. Pale rosy white. Length, 1·12; breadth, ·4; angle of spire, 25°.

25. **P. trailli,** *sp. nov.* Spire acute, with broad, shallow, spiral grooves, and prominent transverse ribs on the central and anterior portions of the whorls; posterior margin, near the suture, flat; aperture oval, canal short. Yellowish brown; body whorl shorter than the spire. Length, 1·1; breadth, ·4; angle of spire, 28°.

Stewart's Island, 24 fathoms.

26. **P. lævis,** *sp. nov.* Spire acute; whorls smooth, with median transverse ribs, which are flatter on the body whorl; aperture oblong, fissure deep, close to the suture; canal very short; body whorl shorter than the spire. Pale yellow brown, with a broad spiral band of pink down the centre of the whorls, across the ribs; mouth and columella white, shading off into pink. Length, ·75; breadth, ·28; angle of spire, 30°.

Stewart's Island.

27. **P. albula,** *sp. nov.* Spire acute; whorls spirally grooved, and with a central prominent spiral rib; smooth; aperture oblong, canal very short; body whorl as long as the spire. Ochraceous white; apex and columella white. Length, ·35; breadth, ·15; angle of spire, 30°.

Stewart's Island.

LACHESIS.

Turreted, whorls convex; suture straight and deep; aperture obovate, prolonged into a very short canal.

Europe.

28. **L. sulcata,** *sp. nov.* Body whorl about as long as the spire; whorls rather flattened, deeply distantly spirally grooved, about eight on the body whorl; outer lip thickened. Reddish brown, sometimes variegated with white. Length, ·35; breadth, ·15.

Stewart's Island.

DAPHNELIA.

Fusiform, the last whorl as long as the spire; aperture oval, canal very short, outer lip with an indentation near the suture.

New Guinea.

29. **D. (Mangelia) letourneuxiana,** *Crosse, Journ. de Conch.*, 1865, *p.* 425. Spire acute, as long as the body whorl; transversely ribbed, and finely spirally striated; columella smooth. Pale brown or purplish brown, with a spiral pale band. Length, ·43: breadth, ·17.

Stewart's Island. Chatham Islands. Australia.

Family—Tritonidæ.

Head truncated; tentacles moderate; mantle enclosed. Shell variced; operculum oval, nucleus sub-apical.

TRITON.

Shell ovate; canal rather short; spire conical, with few varices not arranged under one another.

All warm seas.

*30. **T. variegatum,** *Lamark, l.c.*, ix., *p.* 623. Spire very acute; whorls with broad flat spiral ribs, with smaller ones between them, sutures banded with a nodulous rib; columella wrinkled; outer lip crenulated. Brown or pinkish brown, ribs paler, with purplish black chevroned transverse bands; interior salmon-coloured; columella

yellowish white, with purplish black streaks in the depressions of the wrinkles. Length, 15; breadth, 6·5; angle of spire, 40°.

Dr. Dieffenbach brought this species to England from Cape Maria Van Diemen.

31. **T. australe,** *Lamark, l.c.*, ix., *p.* 625. Spire produced; whorls flattened, spirally grooved, both the grooves and the ridges sub-grooved; some of the ridges sub-nodular; columella callous, with a tooth at the posterior end, and generally with some wrinkles at the anterior end; outer lip expanded, nodular, the nodules generally arranged in groups of two or three. Brownish pink, variegated with brown; inside pinkish white; columella ochraceous; outer lip white with brown transverse bands from the nodules to the edge. Length, 7; breadth, 4; angle of spire, 50°.

North Island. Chatham Islands.

32. **T. spengleri,** *Chemnitz; Lamark, l.c.*, ix., *p.* 627. Shell thick, ponderous, spire produced; whorls flattened, spirally grooved, with a row of nodules, which are sometimes obsolete on the body whorl; varices few; columella with a small rounded tooth at the posterior end, and sometimes a few wrinkles in the centre; outer lip much expanded and plicated; canal short, sub-perforate. Yellowish white, covered with a pale brown transparent epidermis. Length, 5·5; breadth, 3; angle of spire, 40°.

New Zealand and the Chatham Islands.

33. **T. (Simpulum) acclivis,** *sp. nov.* Shell thick; spire rather depressed, bent slightly backwards, and to the right; whorls broadly spirally channelled, the posterior ridges with blunt nodules; varices few (one only); columella wrinkled; outer lip grooved; canal slightly produced. Pale brown; columella dark chocolate brown; outer lip and varices banded with the same colour and white. Length, 2·75; breadth, 1·6; angle of spire, 70°. (See plate fig. 8.)

RANELLA.

Shell ovate, compressed; varices two on each whorl, rounded, forming a border to the shell.

34. **R. leucostoma,** *Lamark, l.c.*, ix., *p.* 542. Oval; whorls spirally striated; varices nearly continuous, with several elongated tubercles between them; columella with a prominent posterior tooth and a few anterior wrinkles; outer lip thickened, toothed; canal short. Reddish brown, varices banded with white and blackish purple; inside white; covered with a brown hairy epidermis. Length, 2·5; breadth, 1·5; angle of spire, 50°.

Australia.

35. **R. vexillum,** *Sowerby; R. argus, Dieff. N.Z.*, ii., *p.* 229; *R. tumida, Dunker.* Oval, obliquely compressed; whorls spirally striated, some of the ridges sub-nodulose; varices flattened, not continuous; columella with a thick posterior tooth, and a few median wrinkles; outer lip dentate, teeth in pairs; canal short. Chestnut brown, ridges sometimes purplish; varices coloured similarly to the

rest of the shell; inside white; covered with a brown hairy epidermis. Length, 4; breadth, 2·4; angle of spire, 62°.

Tasmania.

FAMILY—BUCCINIDÆ.

Head truncated, tentacles moderate; mantle enclosed; shell oval; columella simple, callous; canal abruptly reflexed, producing a notch in front; operculum with an oblique central groove, nucleus apical.

BUCCINUM.

Shell conic, few whorled; anterior canal very short; columella smooth.

Cold seas.

36. **B. (Cominella) maculatum,** *Martyn; Purpura turgida, Gray,* ‡*Dieff. N Z.*, ii., *p.* 234; *B. maculatum, Deshayes, Anim. sans vert.*, x., *p.* 185. Shell ovate, turgid; spire short, whorls convex, transversely plicated; smooth; aperture ovate, callous above, outer lip thin, sinuated, smooth. Pale greyish yellow, with transverse reddish purple spots, arranged in spiral rows; interior and columella yellow. Length, 2; breadth, 1·3; angle of spire, 60°.

Common. Chatham Islands.

Var. B.—Spire shorter, hinder part of body whorl swollen; body whorl with shallow spiral grooves.

Common.

37. **B. (Cominella) zealandicum,** *Reeve.* Shell thick; whorls flattened, six or seven in the spire; spirally striated and transversely plicated; a broader and deeper groove round the posterior portion of the whorls near the suture; outer lip grooved internally, columella slightly plaited anteriorly. Pinkish yellow; inside brownish, lip and columella yellow. Length, 1·6; breadth, ·85; angle of spire, 45°.

Stewart's Island.

Var. B.—Larger, spire not so acute, whorls faintly banded with brownish pink. Length, 2·25; breadth, 1·3; angle of spire, 55°.

Chatham Islands.

Mr. Reeve describes his shell as "filleted between the folds with transversely oblong red spots, interior of the aperture orange yellow."

38. **B. (Cominella) costatum,** *Quoy, l.c.*, ii., *p.* 417. Shell rather thin; whorls spirally striated, and transversely ribbed; columella smooth; outer lip smooth, slightly angled posteriorly; canal short. Dark brown; inside dark purplish brown. Length, ·8; breadth, ·48; angle of spire, 42°.

Common from Stewart's Island to Bay of Islands. Australia.

39. **B. luridum,** *sp. nov.* Small, spire acute; whorls finely spirally striated, and transversely ribbed; columella smooth; outer lip grooved inside, not angled; canal short. Brown or purplish; interior paler. Length, ·7; breadth, ·3; angle of spire, 36°.

Auckland.

40. **B. (Cominella) lævigatum,** *B. lineolatum, Quoy, l.c.*, ii., *p.* 419, *nec. Lamark.* Shell smooth; whorls flattened, those of the

spire sub-costate ; inner lip smooth, outer rather thin, slightly grooved in the interior ; canal short. Greyish brown, with narrow spiral lines, not very close, of brownish black ; columella and canal orange ; inner lip banded with brownish purple and purplish white. Length, 1·15 ; breadth, ·52 ; angle of spire, 45°.

41. **B. cinctum,** *Quoy, l.c.*, ii , *p.* 413. Shell thick, conical, whorls flat, spirally grooved ; columella wrinkled anteriorly, outer lip dentate and grooved, canal moderate ; a small tooth at the posterior end of the inner lip. White, the ribs brownish red ; interior white. Length, 1·25 ; breadth, ·7 ; angle of spire, 58°.

Found also at Tongatabou.

42. **B. testudineum,** *Quoy, l.c., p.* 415. *Purpura maculosa, Gray, Dieff. NZ.*, ii., *p.* 233 Shell conical, whorls flattened, smooth ; columella smooth, outer lip thin, crenulated ; canal short. Spirally tesselated with yellowish white and purplish brown ; sometimes purplish brown with spiral rows of white spots ; inside dark purple. Length, 1·65 ; breadth, ·9 ; angle of spire, 47°.

Common. Chatham Islands.

*43. **B. gradatum,** *Deshayes, Anim. sans vert.*, x., *p.* 186. Shell ovato-ventricose, smooth, yellow, ornamented with longitudinal flexuous brown lines ; whorls flat, margined ; aperture ovate, interior yellow, callous above ; lip thin, acute, simple ; columella callous. Length, 3 ; breadth, 1·8.

New Zealand (Kiener).

NASSA.

Shell-like Buccinum ; columella lip callous, expanded, forming a tooth-like projection near the anterior canal.

World-wide.

I have seen no species of Nassa from New Zealand, and think that there must be some mistake in the localities.

*44. **N. rutilans,** *Reeve.* Shell accuminately ovate, smooth, shining, variegated longitudinally with ash olive and grey ; spire exserted, thinly plaited at the apex ; columella arched, but little callous ; lip thickly varicose, smooth.

*45. **N. nigella,** *Reeve.* Shell accuminately ovate, transversely grooved, longitudinally granosely ribbed ; swarthy brown within and without ; columella rather expanded, shining ; lip simple, margined without.

*46. **N. novæ zealandiæ,** *Reeve.* Shell accuminately conical, mottled black and brown ; spire sharp, with the suture impressed ; whorls slightly angled at the upper part, transversely linearly grooved, longitudinally strongly grain-ribbed ; columella twisted, white ; lip thin, varicose.

*47. **N. corticata,** *Adams.* Shell ovately conic, produced at the spire, covered with a greenish brown epidermis ; whorls nodose at the upper part, last whorl ornamented in front with a sub-nodose belt, posteriorly coronated with nodules ; columella but little callous, two-plaited in front ; lip margined outwardly, ridged within.

FAMILY—PURPURIDÆ.

Shell various, aperture large; animal with a small head and foot; operculum oval-oblong, nucleus lateral.

PURPURA.

Shell ovate; spire short; aperture slightly notched in front; columella flattened or concave.

Warm and temperate seas.

48. **P. haustrum,** *Martyn; Quoy, l.c.*, ii., *p.* 554. Ovato-oblong, ventricose, spire depressed, rugose, spirally striated; outer lip thin, wrinkled; columella hollowed, canal large. Brown; interior greyish white, with a broad band of brownish purple on the right lip, and generally a spot of the same at the posterior end of the columella. Length, 3; breadth, 2; angle of spire, 90°.

Chatham Islands.

49. **P. (Polytropa) textiliosa,** *Lamark, l.c*, x., *p.* 77. Shell ventricose, broadly spirally grooved, each groove with from one to four smaller raised ridges, the main ridges also with one or two small grooves; finely transversely striated; outer lip crenulated and grooved internally, margin thin. Yellowish white; columella white; inside yellow, with a white band round the margin of the outer lip. Length, 2·9; breadth, 1·8; angle of spire, 73° to 95°.

50. **P. (Polytropa) succincta,** *Lamark; Buccinum lacunosum, Brug.; P. rugosa, Lamark (young); nec. Quoy; P. emarginata, Deshayes.* Shell ventricose, deeply and broadly spirally grooved, the grooves crossed by thin, rather distant, transverse lamellæ, which do not reach as high as the tops of the ridges; ridges smooth; outer lip crenulated and grooved, margin rather thick. White or yellowish white; inside white, nacrous. Length, 2·3; breadth, 1·5; angle of spire, 68°.

Chatham Islands.

51. **P. rugosa,** *Quoy, l.c.*, ii., *p.* 569; *nec. Lamark.* Ovato-acute, spire produced; whorls narrowly, rather distantly, spirally grooved, rough with numerous thin imbricating transverse foliations; outer lip crenulated and grooved; columella with one fold. Brownish white; interior purple, columella and a band round the mouth white or yellowish. Length, ·75; breadth, ·45; angle of spire, 54°.

52. **P. (Polytropa) scobina,** *Quoy, l.c.*, ii., *p.* 567; *P. albomarginata, Deshayes.* Ovate or oblong, spirally ribbed, rough with irregular undulated transverse lamellæ; spire produced; spire whorls carinated, nodulose; outer lip crenulated and grooved; columella one plaited; canal large. Brown; interior brownish purple. Length, 1; breadth, ·6; angle of spire, 60°.

Common.

This shell is easily distinguished from *P. rugosa* by the transverse lamellæ being more irregular and lying flatter. It is generally much worn and often covered with barnacles.

53. **P. (Polytropa) quoyi,** *Reeve; P. tristis, Dunker, Voy. Novara, Zoology.* Ovate, sub-conical; whorls convex, transversely ribbed; ribs unequal; right lip thin, grooved interiorly; columella slightly excavated; canal short. Whitish brown, ribs darker; columella chestnut brown, or light red; outer lip variegated with black and white, canal blackish brown. Length, 1; breadth, ·5; angle of spire, 70°.

Common. Chatham Islands.

This species differs from the last in being smoother, the spire shorter, and the ribs less pronounced; the columella is more excavated and broader, and the canal shorter.

RICINULA.

Shell thick, tuberculated, or spiny; aperture contracted by callous projections on the lips.

India. China. Philippines. Australia. Pacific.

* 54. **R. iodostoma,** *Lesson; Deshayes, Anim. sans. vert.*, x., *p.* 54. Shell ovate, thick, ponderous, rather depressed, spire very short; transversely striated, and obsoletely ribbed; ribs more prominent at the margin; aperture strongly toothed, thickened at the upper part. Whitish, ribs brownish black, intermediate striæ brown; aperture bright pinkish purple. Length, 1·4; breadth, 1·2.—(*Reeve.*)

FAMILY—OLIVIDÆ.

Shell sub-cylindrical, polished; columella callous, aperture elongated; operculum small or rudimentary; animal with a large foot, often enclosing part of the shell, and forming two lobes in front.

OLIVA.

Spire very short, aperture linear, notched in front; operculum none.

Sub-tropical.

* 55. **O. (Ispidula) erythrostoma,** *Lamark, l.c.*, x., *p.* 606. Shell white, with longitudinal, irregular, zig-zag lines of purplish brown and yellow, and with two interrupted bands of brown; interior reddish orange or saffron. Length, 2·65.

Taken home by Dr. Stanger.

ANCILLARIA.

Shell like Oliva, but the spire more produced, covered with an enamelled coat.

Madagascar. Red Sea. India. Australia. Pacific.

56. **A. (Anaulax) australis,** *Quoy, l c.*, iii., *p.* 20; *A. albisulcata, Quoy, l.c.*, iii., *p.* 19. Shell ob-ovate, spire accuminate, callously obtuse in old shells; columella constrictedly twisted; an obsolete tooth near the anterior end of the outer lip. Leaden blue or brownish purple in the centre, often margined with white, both ends generally

tinged with chestnut; interior brownish purple. Length, 1·75; breath, ·8.

Common.

* 57. **A. pyramidalis,** *Reeve.* Shell ovate, rather thin, ventricose, purplish fawn colour, callosity fuscous; spire pyramidally acuminated, callous throughout; columella arcuately twisted.—(*Reeve.*)

I have seen no specimens that I can refer to this species unless it be the young of *A. australis.*

* 58. **A. obesa,** *Sowerby.* Shell ovate, rather stout; dull white, banded and flamed with purplish red; spire conical; whorls rather swollen round the upper part, double grooved at the lower; columella conspicuously arched.—(*Reeve.*)

FAMILY—VOLUTIDÆ.

Shell convoluted; aperture notched in front; columella deeply plaited. Animal with a recurved siphon, and large foot.

VOLUTA.

Shell oval or fusiform, spire more or less produced; aperture large, without a canal.

Pacific Ocean from Cape Horn to Java. Tropical Atlantic.

59. **V. (Alcithoe) pacifica,** *Lamark, l.c.*, x., 399; *V. arabica, Gmel.; V. gracilis, Swainson; V. fusus, Quoy, l.c.*, ii., 627 *(young); V. cymbiola, Swainson.* Shell ovato-fusiform; whorls rather flattened in the adult, with a row of tubercles increasing in size anteriorly; shell rather thin; aperture large, widening anteriorly; columella with four or five plaits. Fulvous with dark brown or blackish, angular, flexuous, anastomosing, transverse markings, which, being thicker and darker in certain places, form three or four more or less distinct spiral bands on the body whorl; sometimes entirely covered with a dark reddish brown coating. Length, 7·5; breadth, 3; angle of spire, 40° to 48°.

Var. B. (*V. gracilis*).—Small and narrow; whorls sub-nodulose.

Var. C.—Pale fulvous without any markings; whorls smooth; columella with five or six plaits.

Both of these varieties are sometimes covered over with a dark reddish brown coating, like the typical form.

60. **V. (Alcithoe) subplicata,** *sp nov.* Shell small, thick; elongato-oval; spire whorls flattened, plicate; body whorl plicate posteriorly; aperture elongate, rather narrow; columella with four plaits; outer lip thickened. Fulvous with chestnut-brown, angular, flexuous, anastomosing, transvere markings, not forming bands; sometimes covered with a dark reddish brown coating. Length, 2·15; breadth, ·78; angle of spire, 36° to 40°.

Rare.

61. **V. (Cymbiola) kirki,** *sp. nov.* Broadly ovate; spire depressed; a few blunt tubercles on the body whorl; columella with

four very deep plaits; aperture large; inner lip with a thin callous. Yellowish brown. Length, 1·75; breadth, 1·57; angle of spire, 80°.

A single specimen is in the Auckland Museum.

MITRA.

Shell fusiform, thick; spire elevated, acute; aperture small, notched in front; columella obliquely plaited; operculum small.

Widely spread.

62. **M. obscura,** *sp. nov.* Shell ovato-conical; spire acute; whorls sub-carinate, those of the spire transversely plicate; body whorl very finely longitudinally striated; beak spirally striated behind; aperture narrow; columella with four plates, the anterior one small; outer lip angled, deeply notched in front. Blackish brown, spotted with white, especially on the spire; interior purplish; beak brown. Length, ·64; breadth, ·33; angle of spire, 60°.

Bay of Islands.

* 63. **M. aurantiaca,** *Lamark, l c., x., p.* 330. Shell ovate, transversely ribbed; outer lip crenulated; columella with four plaits. Golden yellow, with a white band near the upper part of the body whorl; the spire whorls are white below, and orange towards the upper part. Length, ·85.

Said by Reeve to come from New Zealand.

* 64. **M. nucea,** *Gronovius.* Shell oblong, ovate, very thick, solid, spire short, apex small, acute; smooth, longitudinally rather obsoletely striated. White, marked throughout with rather distant obscure rows of black dots, encircled with two somewhat indistinct black bands; columella six-plaited, interior of the aperture flesh tinted.—(*Reeve.*)

MARGINELLA.

Shell smooth, bright; spire short or concealed; aperture truncated in front; columella plaited; outer lip (of adult) with a thickened margin.

Tropical.

65. **M. albescens,** *sp. nov.* Shell small, oval, translucent; spire short; aperture narrow; columella with four plaits. White, with indications of two yellow spiral bands. Length, ·2; breath, ·1.

Stewart's Island. Chatham Islands.

66. **M. vittata,** *sp. nov.* Sub-cylindrical, rather flattened below; spire concealed; columella with four or five plaits near the anterior end; outer lip not thickened (young?). Yellowish white, with thin interrupted spiral bands of brown; columella white. Length, ·35; breadth, ·2.

Family—Columbellidæ.

Shell oval, spire moderate; aperture narrow, straight, with a very short canal.

COLUMBELLA.

Spire rather produced; aperture generally restricted in the middle by a swelling on the outer lip; columella excavated.

Sub-tropical.

* 67. **C. zebra,** *Gray.* Shell oblong, somewhat pyramidal, smooth, fulvous, conspicuously striped longitudinally with chestnut; aperture rather broad, lip slightly thickened within, faintly denticulated.—(*Reeve.*)

68. **C. (Atilia) rubiginosa,** *sp. nov.* Fusiform, smooth, whorls transversely plicated; spire elevated, acute; aperture rather broad; outer lip thin; not swollen; columella with four oblique teeth; pink or brownish pink. Length, ·3; breadth, ·15.

Chatham Islands only.

FAMILY—CASSIDIÆ.

Sub-globular, spire short; aperture with a recurved canal; operculum ovate or oblong, annular, nucleus elongate in the middle of the inner side.

CASSIS.

Last whorl large, aperture linear, long, with a short sharply recurved sinistral canal in front; inner lip forming a large transversely wrinkled plate; outer lip thickened, reflected, plicate or toothed.

Tropical and warm seas.

69. **C. pyrum,** *Lamark, l.c.*, x., *p.* 33; *C. zeylanica, Lam., l.c.*, x., *p.* 33. Shell ovate, ventricose; whorls obtusely angled, nodulose on the angles; upper whorls finely striated; aperture dilated; columella smooth, with a large plait at the anterior end; outer lip reflexed, smooth. Pinkish white, with bands of chestnut brown wavy spots; outer edge of lip banded with purplish brown. Length, 3·25; breadth, 2·25; angle of spire, 102°.

Australia. Ceylon.

70. **C. achatina,** *Lamark, l.c.*, x., *p.* 33. Ovato-acute, ventricose; whorls flattened, smooth; aperture moderate; columella smooth, with a few plaits at the anterior end; outer lip smooth. Purplish brown, spirally variegated with lighter and darker; interior pale purple. Length, 1·5; breadth, 1; angle of spire, 85°.

Omaha (not full grown). Australia. Cape of Good Hope.

FAMILY—DOLIIDÆ.

Shell thin, sub-globose; spire short; operculum none.

DOLIUM.

Shell ventricose, spirally grooved; last whorl very large; outer lip waved.

Tropical and warm seas.

71. **D. variegatum,** *Lamark, l.c*, x., *p.* 143. Grooves simple, without any elevated line; columella smooth, perforated; suture ex-

cavated. Yellowish brown, varied longitudinally with darker and irregularly spotted with purplish brown on the ribs; interior yellowish brown, columella white. Length, 4·75; breadth, 4; angle of spire, 120°. Smaller and not so much spotted as Australian specimens.

From the North Cape to Tauranga. Australia.

FAMILY—VELUTINIDÆ.

Shell thin, ear shaped; spire very small; aperture very large.

LAMELLARIA.

Shell spiral, pellucid; body whorl large, depressed; columella oblique, spiral; no operculum.

Europe. Philippines. Australia.

72. **L. indica,** *Leach.* Transparent, horny white. Length, ·32; breadth, ·72.

Islet Reef, Cook Strait; Cape Farewell. Australia.

FAMILY—NATICIDÆ.

Shell globular or oval, spire short; aperture semicircular; animal with a large foot much produced in front; operculum spiral, horny, sometimes covered with a shelly external coat.

NATICA.

Shell hemispherical, solid; aperture moderate; inner lip flattened; operculum large.

Widely spread.

73. **N. zealandica,** *Quoy, Voy. Astrolabe,* ii., *p.* 327. Shell smooth, perforate, pillar visible in the umbilicus; very finely transversely striate; inner lip callous; operculum shelly. Yellowish or reddish brown, with about six interrupted spiral chestnut brown bands; the spots generally lunate; interior pale brown; columella, mouth, and interior portion of body whorl, white. Length, 1·1; breadth, 1·05.

Common. Chatham Islands.

74. **N. vitrea,** *sp. nov.* Shell polished, smooth; perforated, pillar not visible in the umbilicus; operculum horny. White. Length, ·35; breadth, ·34.

Stewart's Island and Chatham Islands.

FAMILY—SCALARIDÆ.

Shell turreted; whorls varied; mouth entire; operculum horny, spiral.

SCALARIA.

Characters the same as the family.

Widely spread.

75. **S. zelebori,** *Dunker, Novara, Zool.* Shell accuminate, imperforate; whorls eight to ten, rounded, obsoletely spirally grooved; varices thin, without intermedial striæ, eleven to thirteen in a whorl;

mouth round; last whorl keeled. White. Length, 1; breadth, ·32; angle of spire, 20°.

Auckland and Bay of Plenty.

76. **S. lineolata,** *Kiener.* Shell acuminate, imperforate or subperforate; whorls five to seven, rounded; varices numerous, about twenty in the body whorl, thin; mouth oval. White, with a pale brown band on the anterior part of the body whorl. Length, ·45; breadth, ·2; angle of spire, 32°.

Australia.

FAMILY—PYRAMELLIDÆ.

Shell turreted, mouth entire, columella with three or four plaits or smooth; operculum horny, spiral, of few whorls. Animal with broad folded tentacula and sessile eyes on the outer base of the tentacles.

OBELISCUS.

Turreted, smooth; aperture semi-oval, entire, rounded anteriorly; columella straight, with more or less numerous folds.

Warm seas.

77. **O. roseus,** *sp. nov.* Whorls flattened, smooth. White, or pinkish, spirally banded with dark pink. Length, ·2; breadth, ·1.

Stewart's Island.

CHEMNITZIA.

Shell slender, elongated; whorls plaited; apex sinistral; aperture simple, ovate; peristome incomplete.

Widely spread.

78. **C. zealandica,** *sp. nov.* Turreted, whorls transversely plaited, smooth. White. Length, ·23; breadth, ·1.

Stewart's Island.

Very like *Turbonilla nitida*, Angas, *Proc. Zool. Soc.*, 1867, p. 112.

ODOSTOMIA.

Shell subulate or ovate, smooth, apex sinistral; aperture ovate; peristome not continuous; columella with one fold; lip thin; operculum indented on one side.

Widely spread.

79. **O. lactea,** *Angas. Proc. Zool. Soc.*, 1867, *p.* 112. Shell turreted, whorls flattened, very finely transversely striate. White, sometimes slightly tinged with pink; sub-diaphanous. Length, ·3; breadth, ·14.

Stewart's Island. Australia.

EULIMA.

Shell turreted, polished; mouth ovate; columella simple, rather thickened; operculum half ovate.

Widely spread.

80. **E. chathamensis,** *sp. nov.* Turreted, apex blunt, spire whorls obsoletely transversely plaited. White. Length, ·23; breadth, ·13.

Chatham Islands only.

FAMILY—CONIDÆ.

Shell inversely conical; aperture long and narrow; outer lip notched at or near the suture; operculum minute, lamellar.

CONUS.

Characters of the family.

Tropical seas.

81. **C. zealandicus,** *sp. nov.* Shell turbinate, spire short, conical; body whorl with distant spiral striæ, which at the anterior end are elevated; spire whorls spirally grooved. Pale cinnamon brown, the spiral striæ darker; posterior edge of body whorl white with chestnut spots, anterior portion of body whorl varied with white, forming an irregular spiral band before the middle; spire whorls with small chestnut spots. Length, ·6; breadth, ·3; angle of spire, 83°.

Allied to *C. anemone*, Lamark, from Australia.

* 82. **C. distans,** *Hwass.* Shell somewhat elongately turbinated, slightly attenuated in the middle; reddish yellow, sometimes zoned with pale ash colour; encircled with distant, somewhat obsolete, impressed lines; base stained with blackish violet; spire convexly exserted, coronated with obtuse white knobs, the interstices between which are reddish or yellowish brown; apex very peculiarly flatly truncated.—(*Reeve.*)

New Zealand (Cuming).

Sub-order—Rostrifera.

Head moderate, with a produced, contractile, transversely annulated rostrum; tentacles far apart, on the sides of the base of the rostrum; eyes on the outer side or behind the base of the tentacles; phytophagous.

FAMILY—STROMBIDÆ.

Shell solid, spiral, with an expanded lip deeply notched near the canal; operculum claw-shaped, serrated on the outer edge; muzzle elongate; eyes on the top of thick peduncles, with the tentacles on the sides.

STROMBUS.

Shell tubercular or spiny; spire short; aperture long, with a short canal above and truncated below; outer lip lobed above and sinuated near the notch of the anterior canal.

Tropical and warm seas.

83. **S. novæ zealandiæ,** *Deshayes, l.c.*, ix., *p.* 715; *S. pacificus, Sowerby.* Shell oblong; whorls flat, finely striated, nodulous; the posterior row of nodules on the body whorl much larger; spire short; outer lip not much expanded, with two posterior and two anterior

notches. Yellowish white, clouded with brown; interior reddish. Length, 2·8; breadth, 1·6; angle of spire, 62°.

A specimen is in the Auckland Museum, from the Wade.

Peru.

84. **S. troglodytes,** *Lamarck, l.c.*, ix., *p.* 703. Shell ovato-acute; spire whorls angled with knotty plaits; body whorl tubercular above; outer lip expanded, anterior sinus distinct. Yellowish white, with two bands above dotted with yellow, and two chestnut ones beneath, and rays running through the whorls; interior yellowish; columella white. Length, 1·5.

A doubtful native; dead shells are not unfrequently found in Hauraki Gulf.

STRUTHIOLARIA.

Shell turreted, whorls angular; aperture truncated in front, columella oblique, outer lip prominent in the middle, reflexed and thickened in the adult; operculum claw-shaped, curved inwards, with a projection from the outer concave edge.

Australia and New Zealand.

85. **S. gigas,** *Sowerby, Thes. Conch.*, i., *p.* 23; *S. papulosa, Deshayes, l.c.*, ix., *p.* 535. Shell ovato-acute; whorls rounded, sub-nodulose, deeply spirally striated; columella oblique; whorls eight. Yellowish brown; interior purplish brown; pillar and mouth white. Length, 3·8; breadth, 1·8; angle of spire, 55°.

Stewart's Island.

86. **S. nodulosa,** *Lamarck, l.c.*, ix., *p.* 534. *S. straminea of authors.* Shell ovato-acute; whorls angled, with a row of nodules on the ridge; spirally striated; whorls seven or eight. Yellowish, with close longitudinal waved stripes of purple; interior purple; mouth yellow, or white in old shells. Length, 3·5; breadth, 1·9; angle of spire, 55°.

Var. B.—S. papulosa, Chenu; not of Deshayes. Dark reddish brown, covered with a white chalky epidermis; mouth greyish white, stained with black on the outer edges.

87. **S. scutulata,** *Deshayes*, ix., *p.* 536. Shell ovato-acute; whorls six, angled, sub-nodulose, finely spirally striated; body whorl flattened in the centre; columella very oblique. Reddish brown, with longitudinal undulating streaks of darker; mouth yellowish brown; interior pale violet. Length, 1·75; breadth, 1; angle of spire, 55°.

88. **S. vermis,** *Martyn; S. crenulata, Lamarck, l.c.*, ix., *p.* 535. Shell ovato-acute; whorls six, rounded; widely spirally striated; body whorl slightly flattened in the centre; sutures deeply excavated. Pale brownish, longitudinally streaked with reddish brown. Length, 1·6; breadth, 1·1; angle of spire, 62°.

Family—Cypræidæ.

Shell convolute, enamelled, spire concealed; mouth narrow, channelled at each end, lips toothed; tentacles long, mantle expanded on the sides.

CYPRÆA.

Shell ovate, smooth; inner lip with a fold in front.
Warm seas.

* 89. **C. arabica,** *Linnæus;* variety *Maculata*, *Barnes.* Ovato-ventricose, white or bluish white, with irregular brown spots; lips flat, reddish gray; teeth pale chestnut. Length, 2·5 inches.
India. Polynesia.

* 90. **C. caput-serpentis,** *Linnæus.* Ovate, gibbous; brown spotted with white, lips white, margins dark brown, interior violet. *Young* ash-coloured, with a dark central band. Length, 1·5 inches.
India. Mauritius. South Africa. Australia. Polynesia.

* 91. **C. tessellata,** *Deshayes, Anim. sans vert.*, x., *p.* 553. Shell very thick and solid, somewhat squarely ovate; sides thickened, back a little accuminated; extremities blunt, the anterior furnished with a somewhat obscure callosity; aperture narrow, teeth small, slender; back ferruginous ash colour, three banded, bands very broad, sides tesselated with square brown and white spots, the two upper spots on both sides very dark bright chestnut; callosity white; base tesselately variegated with brown and white; teeth orange brown.—(*Reeve.*)

92. **C. punctata,** *Linnæus; C. stercus-muscarum*, *Lamark*, x., *p.* 530; *C. punctalata*, *Sowerby.* Shell ovato-oblong, small, thin, polished, spire mamillate; inner lip sparingly toothed, smooth in the middle. White. Length, ·55; breadth, ·37.
The typical form inhabits the Philippines, and is sparingly spotted with red.

TRIVIA.

Shell ovate, transversely ribbed, no distinct fold on the inner lip.
Widely spread.

93. **T. australis,** *Lamark, l.c.*, x., *p.* 545. Transverse striæ interrupted by an impressed median line; spire visible. White, with one or two flesh-coloured spots on the back, and the two extremities of the same colour. Length, ·4; breadth, ·32.
Hauraki Gulf in various places.

94. **T. coccinella,** *Lamark, l.c.*, x., *p.* 544. Transverse striæ deep, not interrupted on the back; spire hidden. Above pale pink with a few obscure spots of brown, below white. Length, ·4; breadth, ·25.
Bay of Islands.

Family—Cancellaridæ.

Shell oval, spire generally short; mouth oval, often angular; columella plicated; tentacles long, united at their base; rostrum short.

CANCELLARIA.

Aperture sub-canaliculate, and channelled in front, columella with several oblique folds. Shell cancellated.
Warm and tropical seas.

95. **C. trailli,** *sp. nov.* Shell small, thin, oval; spire short, whorls angled; the entire shell very finely cancellated; columella with three oblique folds; outer lip slightly crenate. White. Length, ·25; breadth, ·17; angle of spire, 70°.

Stewart's Island.

FAMILY—TRICHOTROPIDÆ.

Shell spiral, more or less turbinated; columella smooth.

TRICHOTROPIS.

Shell turbinated, thin, whorls keeled; mouth large, columella obliquely truncated.

Northern seas.

96. **T. inornata,** *sp. nov.* Small, cancellated, spire produced, without fringes; a short anterior canal. Pale brown, or white. Length, ·43; breadth, ·25; angle of spire, 40°.

Stewart's Island. Chatham Islands.

FAMILY—CERITHIIDÆ.

Shell spiral, elongate, many-whorled; aperture channelled in front, and with a less distinct posterior canal. Rostrum wrinkled; tentacula lateral; eyes on the outer side of the base; foot short, broad; operculum horny, spiral.

CERITHIUM.

Shell turreted; aperture oval, oblique; anterior canal short, truncate or recurved; operculum semicircular, pauci-spiral.

World-wide.

97. **C. bicarinata,** *Gray, Dieff. N.Z.*, ii., *p.* 241. Whorls rather convex, obsoletely spirally striated, and transversely plicated; the body whorl with two spiral ridges on the anterior end, separated by a concave groove. Blackish purple, generally with a rough brown or reddish brown coating. Length, 1·12; breadth, ·38; angle of spire, 23°.

Common.

98. **C. alternatum,** *sp. nov.* Whorls deeply spirally grooved, with a small ridge in the bottom of each groove, and transversely plicated; outer lip expanded. Yellowish brown; interior white, with spiral bands of purplish black. Length, ·95; breadth, ·38; angle of spire, 23°.

Tauranga.

99. **C. subcarina,** *Sowerby; C. Australis, Gray, Dieff. N.Z.*, ii., *p.* 241; *nec. Quoy, Voy. Astrolabe*, v. 3, *p.* 55, *f.* 7. Whorls nearly flat, slightly transversely plicated; body whorl with two spiral grooves at the anterior end. Brownish black, often with a brown coating; interior dark purple, with one or two lighter bands. Length, ·45; breadth, ·17; angle of spire, 28°.

Common. Chatham Islands.

100. **C. kirki,** *sp. nov.* Whorls flatish, smooth, polished, transversely plicated; body whorl small; mouth oval, columella smooth, straight; canal short, slightly bent to the left. Greyish black, greyish, or yellowish white, spirally banded near the mouth with purplish brown. Length, ·8; breadth, ·22; angle of spire, 18°.

Auckland.

101. **C. cinctum,** *sp. nov.* Whorls flat, deeply spirally grooved; aperture rounded; canal very short. Brownish white. Length, ·43; breadth, ·1.

Stewart's Island, 14 to 30 fathoms.

102. **C. exilis,** *sp. nov.* Whorls flat, deeply spirally grooved, and transversely plicated; sulcus deep; aperture rounded; canal moderate. Light brown. Length ·21; breadth, ·07.

Stewart's Island, 30 fathoms.

103. **C. (Ino) minimus,** *sp. nov.* Whorls flat, sinistral, spirally grooved and transversely plicated; aperture rounded; anterior canal short, recurved, posterior canal very short, open. Pale brown. Length, ·25; breadth, ·7.

Stewart's Island, 30 fathoms. Bay of Islands.

FAMILY—LITTORINIDÆ.

Shell spiral, turbinated or depressed, never pearly; aperture rounded; peristome entire; operculum horny, pauci-spiral; tentacula far apart on the side of the head.

LITTORINA.

Shell thick, pointed, few-whorled, aperture rounded, outer lip acute; columella rather flattened; imperforate.

World-wide.

104. **L. cincta,** *Quoy, l.c.*, ii., *p.* 481. Ovato-conical, spire acute; body whorl spirally striated; aperture oval; columella flattened. Bluish black, with fine spiral bluish white lines; generally covered with a brown epidermis; interior deep violet; columella dark chestnut brown. Length, ·85; breadth, ·5; angle of spire, 46°.

105. **L. diemenensis,** *Quoy, l.c.*, ii., *p.* 479. Ovato-conical, spire acute, body whorl lightly spirally striated, sub-carinated in large specimens; columella flattened. Bluish white, with a broad spiral band of blackish blue on the body whorl; interior violet with a white band round the mouth. Length, ·45; breadth, ·26; angle of spire, 43°.

Abundant on rocks near high watermark. Chatham Islands. Australia. Tasmania.

* 106. **L. vilis,** *Menke.* Shell pyramidally conical, sharp, imperforated, transversely elevately striated; greenish grey; whorls flatly slanting round the upper part, encircled round the middle with two rows of white nodules; aperture purple brown.—(*Reeve.*)

* 107. **L. pyramidalis,** *Deshayes, l.c.*, ix., *p.* 210. Shell pyramidally ovate, imperforated, spire turreted; whorls concavely slanting

at the upper part, then angled and conspicuously encircled with two rows of tubercles; purple brown; aperture small, columella very broadly excavated, purplish, rather produced at the base.—(*Reeve.*)

Australia.

* 108. **L. luctuosa,** *Reeve.* Shell accuminately ovate, imperforated, whorls slantingly convex, longitudinally plicately striated, spirally grooved towards the lower part; livid brown; aperture rather small, chestnut; columella purplish.—(*Reeve.*)

* 109. **L. novæ zealandiæ,** *Reeve.* Shell somewhat globosely turbinated, spire rather short, very sharp, whorls rounded, spirally irregularly linearly grooved; opaque white, obscurely very faintly red-flamed; aperture nearly rounded, chestnut brown in the interior; columella very broadly excavated, livid chestnut.—(*Reeve.*)

* 110. **L. bullata,** *Martyn.* Shell obliquely conical, trochus-shaped, thick, imperforated, orange-cream-colour, sometimes encircled with brown or blackish grey bands; transversely roughly striated and papillose; papillæ sometimes oblong and more or less obsolete, sometimes prickly, prominent, and numerous.—(*Reeve.*)

RISELLA.

Shell trochiform, imperforate, base flat or concave; whorls keeled; aperture rhombic.

Australia. Tasmania.

* 111 **R. kielmanseggi.** *Dunker, Voy. Novara, Zool.* Shell conical, bluish brown, whorls plicato-nodulose, rugose, marked with numerous oblique points; body whorl acutely angled; base flattish, spirally grooved; throat yellowish white. Length, ·53; breadth, ·64.

Auckland.

Family—Rissoidæ.

Shell minute, spiral, more or less turreted; aperture entire; operculum horny, sub-spiral; foot long, sub-triangular, truncated in front and pointed behind.

RISSOA.

Shell conical, pointed, many-whorled; smooth, ribbed, or cancellated; aperture rounded.

World-wide.

112 **R. rugulosa,** *sp. nov.* Elongated, whorls seven, smooth, obscurely transversely ribbed; aperture ovate. White or yellowish white. Length, 3; breadth, ·12.

Stewart's Island. Chatham Islands.

113. **R. nana,** *sp. nov.* Whorls five, swollen, finely transversely ribbed; aperture ovate. White. Length, ·1; breadth, ·05.

114. **R. subfusca,** *sp. nov.* Whorls five, flattened, smooth but not polished; aperture round. Pale brown. Length, ·12; breadth, ·05.

Stewart's Island.

115. **R. plicata,** *sp. nov.* Elongated; whorls six; spire whorls with two, body whorl with about five, spiral ribs; spire and posterior part of body whorl transversely plicated; mouth round. White. Length, ·15; breadth, ·05.
Stewart's Island.

116. **R. purpurea,** *sp. nov.* Elongated; whorls six, flat, not polished, sutures obscure; aperture round. Spire purple or purplish red, with a posterior spiral white band; body whorl yellowish, also with a posterior white band at the suture. Length, ·1; breadth, ·05.
Stewart's Island.

117. **R. impolita,** *sp. nov.* Ovate; whorls four, rounded, finely spirally striated; mouth ovate. White, not polished. Length, ·1; breadth, ·06.
Stewart's Island.

118. **R. rosea,** *sp. nov.* Ovate; whorls four, rather flat, smooth, polished; mouth round. White or bright pink. Length, ·07; breadth, ·05.
Stewart's Island.

FAMILY—TURRITELLIDÆ.

Shell tubular or spiral, upper part partitioned off; aperture simple; operculum horny, many-whorled; muzzle short; eyes at the outer bases of the tentacles; foot very short.

TURRITELLA.

Elongated, many-whorled, spirally striated; aperture rounded, margin thin; operculum with a fimbriated margin.
World-wide.

119. **T. (Haustator) rosea,** *Quoy, l.c.*, ii., *p.* 136; *T. lineolata, Kiener.* Whorls flattened, spirally striated, the ribs of unequal sizes, generally several small ones between bigger ones, at irregular distances; sutures deep in the anterior whorls only; mouth subquadrate. Reddish brown, or yellowish; finely, spirally banded with purplish brown. Length, 3·5; breadth, ·95; angle of spire, 20°.
Common. Chatham Islands.

120. **T. (Haustator) fulminata,** *sp. nov.* Whorls flattened in the centre, sutures deep; finely spirally striated throughout; mouth sub-quadrate. White with longitudinal undulating markings of pinkish brown. Length, 1·2; breadth, ·3; angle of spire, 18°.
Great Barrier Island.

121. **T. (Haustator) vittata,** *sp. nov.* Whorls flattened, sutures generally scarcely showing; finely spirally striated; mouth sub-quadrate. Yellowish white with distant spiral brown bands, about four on the base. Length, 1·8; breadth, ·5; angle of spire, 15°.

122. **T. (Zaria) pagoda,** *Reeve.* Whorls flattened, finely, equally, spirally striated; spire whorls with one, and body whorl with two, anterior strong spiral ribs; sutures not excavated; mouth sub-

quadrate. White, closely variegated all over with purple. Length, ·65 ; breadth, ·2 ; angle of spire, 18°.

Great Barrier Island.

123. **T. (Eglisia) symetrica,** *sp. nov.* Whorls rounded, with three equal and equally distant spiral ribs ; sutures deep ; mouth roundish. White. Length, ·67 ; breadth, ·22 ; angle of spire, 23°.

Stewart's Island.

FAMILY—VERMETIDÆ.

Shell sub-spiral, irregularly twisted, cylindrical, entire, attached by the outer surface ; foot small, folded on itself ; operculum single or wanting.

SIPHONIUM.

Operculum large, smooth, circular, concave ; scar central, circular, rugose.

124. **S. lamellosum,** *sp. nov.* Shell thick, irregularly twisted, with numerous imbricating transverse ridges, which are often reflexed ; mouth round, operculum hemispherical. White, sometimes tinged with pale violet. Diameter of mouth, ·2.

Forms large masses not attached to other bodies.

VERMETUS.

Operculum large, rather concave ; whorls many, with a thin produced external edge ; scar central, circular, with close regular concentric grooves.

125. **V. cariniferus,** *Gray, Dieff. N.Z.*, ii., *p.* 242. Shell thick, irregularly twisted, with a high compressed wavy keel along the upper edge ; mouth orbicular, with a tooth above it formed by the keel ; operculum orbicular, horny. White ; interior bluish.

CLADOPODA.

Operculum none ; foot elongate, front end simple, hinder extremity oblong, clavate or sub-truncate ; shell irregularly twisted.

126. **C. zealandica,** *Quoy, l.c.*, iii., *p.* 293. Shell white or brownish, lightly longitudinally striated. Animal, with the head blackish with red spots ; margin pale yellow ; foot spotted with red.

* 127. **C. rosea,** *Quoy, l.c*, iii., *p.* 300. Shell small, spirally extended, cylindrical, rugose, pink.—(*Quoy.*)

FAMILY—SILIQUARIIDÆ.

Like *Vermetidæ*, but the mantle and shell with a longitudinal slit ; operculum many-whorled.

SILIQUARIA.

Operculum fringed ; foot end truncate, circular ; shell glassy internally.

Mediterranean. Australia.

128. **S. lævigata,** *Lamark, Anim. sans vert.*, v., *p.* 584; *Vermetus roseus, Quoy, l.c.*, iii., *p.* 300. Shell small, cylindrical, obsoletely ribbed, loosely convoluted, rugose. Pink or whitish.

129. **S. australis,** *Quoy, l.c.*, iii., *p.* 302. Shell irregularly spiral, sub-cylindrical, transversely rugose and obsoletely longitudinally striated. White or yellowish white.

FAMILY—ONUSTIDÆ.

Shell conical, depressed; operculum large, sub-annular, horny; muzzle conical, produced, eyes sessile; foot small, dilated in front.

PHORUS.

Shell trochiform, concave beneath; whorls flat, with foliaceous margins to which stones, &c., are attached; aperture very oblique, not pearly, outer lip thin, much produced; operculum imbricated, nucleus external.

Tropical seas.

130. **P. onustus,** *Reeve; T. agglutinans, Lamark, l.c.*, ix., *p.* 161. Base finely spirally striated, umbilicus covered, margin waved; upper surface covered with stones, shells, corals, &c. Dirty white, base brownish. Diameter of base about 2 inches.

Pacific.

FAMILY—CALYPTRÆIDÆ.

Shell limpet-like, with the apex more or less spiral; interior simple or divided by a shelly process, to which the adductor muscles are attached.

CALYPTRÆA.

Shell obliquely conical, depressed; apex sub-central; whorls well developed, covered with a horny lamellar periostraca; nucleus spiral; base oblong, concave; aperture very large, oblong, four-sided, not quite so wide as the shell; axis deeply concave on the right side of the base.

West Indies. Chili. Europe. India. China. Japan. Philippines.

131. **C. maculata,** *Quoy, l.c.*, iv., *p.* 422; *C. dilatata, Gray, Dieff. N.Z.*, ii., *p.* 243. Shell convex, oblique, conical, rather solid, transversely striated. White, with a purple spot in the centre of the interior; outside covered with a brown rough periostraca. Diameter of base, 1·5 inch.

Common. Chatham Islands.

TROCHITA.

Shell conical, circular, spiral, thin. Apex central; whorls several, well developed. Base concave, circular. Mouth large, oblong, four-sided. Axis central, imperforated, spiral, exposed to the apex of the cavity. Periostraca horny, thin, lamellar.

Magellan Straits. Falkland Islands.

132. **P. tenuis,** *Gray, Proc. Zool. Soc.*, 1867, *p.* 735. Shell thin, conical, depressed, smooth, spirally striated. Yellowish white, apex purplish. Diameter of base, ·75 inch.

CRYPTA.

Shell oblong, elongate. Apex sub-marginal, sub-spiral; internal lamina concave, covering about half the cavity; lip transvere, nearly straight, or with a slight sub-central notch.

Widely distributed.

133. **C. costata,** *Deshayes, Anim. sans vert.*, vii., *p.* 644; *Crepidula costata, Gray, Dieff. N.Z.*, ii., *p.* 242. Convex, with longitudinal broad flexuous ribs. Whitish; brownish purple between the ribs.

* 134. **C. aculeata,** *Lamark, l.c.*, vii., *p.* 642. Oval, brown, surface with spiral lines of spines or small scales; apex lateral, posterior, sub-spiral. Length, 1 inch.

New Zealand (Rev. R. Taylor). Australia. South America. California. West Indies. Kurachee. South Africa.

135. **C. contorta,** *Quoy, l.c.*, iii., *p.* 418. Ovato-elongate; convex, smooth, generally contorted to the right, apex terminal. White.

136. **C. (Ianacus) unguiformis,** *Lamark, l.c.*, vii., *p.* 642. Shell much depressed, generally concave above, apex posterior, ovato-elongate, thin, smooth, sub-pellucid; internal lamina generally convex, lip straight or deeply emarginate. White.

Common, adhering to shells. Australia.

Family—Pileopsidæ.

Shell conical, cup-shaped; apex sub-spiral, small; posterior cavity simple.

HIPPONYX.

Shell thick, obliquely conical, apex posterior; base shelly, with a horse-shoe-shaped impression.

West Indies. Philippines. Australia. Pacific.

137. **H. cornucopiæ,** *Lamark, l.c.*, vii., *p.* 614. Obliquely conical; base ovate; margin smooth; white; radiately striated, and transversely irregularly wrinkled; apex curved. Height, ·45; length, ·5; breadth, ·45.

New Zealand and Chatham Islands; dead shells only. Fossil in the south-east of France.

Order—Scutibranchiata.

Gills consisting of two series of lamellæ, forming one or two series over the back of the neck, or under edge of the mantle round the foot. Animal hermaphrodite. Shell spiral or conical, or composed of several pieces.

Sub-order—Podophthalma.

Eyes pedunculated.

FAMILY—NERITIDÆ.

Shell thick, semi-globose; spire very small; cavity simple; aperture semi-lunate; columella expanded and flattened; outer lip acute; operculum shelly, sub-spiral, articulated.

NERITA.

Shell smooth or spirally grooved; epidermis horny; outer lip thickened and sometimes denticulated within; columella with its inner edge straight and toothed.

Warm seas.

138. **N. atrata,** *Lamark, l.c.*, viii., *p.* 603; *N. nigra, Gray, Dieff. N.Z.*, ii, *p.* 240. Shell spirally striate; blue black; white and chalky when eroded; interior grey, columella and near the mouth white, mouth and outer edge of columella blue black; operculum papillose outside, pale purple, with two spiral bands of blackish purple. Length, ·7; breadth, 1.

Common.

FAMILY—TROCHIDÆ.

Shell spiral, turbinated or pyramidal, pearly inside; operculum calcareous and pauci-spiral, or horny and multi-spiral.

TURBO.

Turbinated, solid, whorls convex; aperture large, rounded, slightly produced in front; operculum shelly and solid, callous outside, internally horny and pauci-spiral.

Tropical seas.

139. **T. smaragdus,** *Lamark, l.c.*, ix., *p.* 194. Sub-globose, imperforate; smooth, or slightly roughened with oblique transverse striæ; columella flattened. Blackish green, covered with a brown epidermis (old worn dead shells are sometimes pink); inside white, slightly iridescent; mouth dark green. Length, 2·25; breadth, 2·4; angle of spire, 85° to 103°.

Var. B.—Spire whorls with one, and body whorl with three, spiral rounded ribs; columella generally dilated and flattened anteriorly.

In the young the spire whorls are sometimes sub-spinose.

Common.

140. **T. (Modelia) rubicundus,** *Reeve, Proc. Zool. Soc.*, 1842. Sub-globose, imperforate, with spiral moniliform ribs, whorls four; columella with a sinistral depression. Reddish purple, varied with white; interior white, slightly iridescent. Length, 2·15; breadth, 2·35; angle of spire, 85°.

Chatham Islands.

141. **T. (Modelia) granosus,** *Lamark, l.c.*, ix., *p.* 137. Turbinate, imperforate; whorls five or six, rather convex, with spiral moniliform lines. Reddish ochraceous, the spiral lines alternately

reddish brown and white; interior white, iridescent. Length, ·85; breadth, 1; angle of spire, 75°.

Common. Chatham Islands.

Not so much depressed as the last, and the granulations smaller.

* 142. **T. undulatus,** *Reeve.* Shell orbicular, broadly and deeply umbilicated; whorls sometimes grooved, sometimes smooth. Bluish green, longitudinally marked with white zig-zag streaks.—(*Reeve*).

IMPERATOR.

Trochiform, thick, with a flat or concave base; whorls keeled, or stellated; aperture angled outside; operculum shelly, concave outside with a spiral rib.

West Indies. South Africa. India. Australia.

143. **I. (Cookia) cookii,** *Lamark, l.c.*, ix., *p.* 131. Conical, body whorl rather ventricose; whorls rounded, obliquely plaited and crossed by oblique rough imbricating laminæ sloping the opposite way to the plaits; central part of base smooth, hollowed in the middle. Pinkish brown; pearly inside. Length, 2·25; breadth, 3·5; angle of spire, 86° to 92°.

Common. Chatham Islands.

144. **I. (Cookia) davisii,** *Stowe, Trans. N.Z. Inst.*, iv., *p.* 218. Conical; body whorl sharply angled and keeled; whorls slightly rounded, obliquely plaited and crossed by oblique rough imbricating laminæ sloping the opposite way to the plaits; central part of the base smooth, scarcely hollowed in the middle. Pinkish brown; pearly inside. Length, 3·65; breadth, 3·3; angle of spire, 57° to 60°.

Cook Strait and Blind Bay.

The spire is much more acute than the last, but perhaps it is only a variety.

145. **I. (Astralium) imperialis,** *Lamark, l.c.*, ix., *p.* 122. Conic, obtuse, whorls convex, with spiral scaly ribs, and a spinose radiate margin; spines curved to the left and backwards; perforation funnel-shaped, extending to the apex. Above purplish or reddish purple; base nearly white; interior iridescent. Length, 1·8; breadth, 3·5; angle of spire, 110°.

From Hauraki Gulf to Stewart's Island. Chatham Islands.

In the young shell the marginal spines are fewer and longer than in older ones. As the animal gets older the upper spines break off to the base, and get so covered with coralline growth that they are difficult to distinguish.

Allied to *I. longispina* from the West Indies.

LIOTIA.

Turbinated, globular, or discoidal, perforated; spire depressed; aperture rounded, pearly; peristome thick.

South Africa. India. Philippines. Australia.

146. **L. (Arene) shandi,** *sp. nov.* Spire depressed; whorls flattened, with several moniliform spiral ribs, the marginal rib of the body whorl larger than the others. White or pinkish white, varied with brown and purplish brown; interior white, slightly pearly. Length, ·3; breadth, ·5.

Chatham Islands only.

Named in honor of Mr. Shand, of the Chatham Islands, who collected many of the shells.

ADEORBIS.

Orbicular, depressed, umbilicated; whorls few, smooth or striated, the last more or less angular; aperture sub-circular; peristome interrupted; columella arched.

West Indies. China.

147. **A. varius,** *sp. nov.* Spirally grooved, smooth; brown, irregularly varied with darker and white; interior purple, varied with white. Length, ·17; breadth, ·3.

Stewart's Island. Chatham Islands.

ROTELLA.

Orbicular, depressed, imperforate, polished; base convex and callous; mouth sub-rotund.

India. China. Phillippines.

148. **R. zealandica,** *Chenu.* Body whorl rather angled, more or less sulcated along the keel. Colour variable; generally yellowish white with radiating chestnut rays; rays often purple or pink. Sometimes entirely brownish pink with an iridescent play of colours. Columella white, with a circular band of purple. Length, ·5; breadth, ·85; angle of spire, 92° to 111°.

Common.

TROCHUS.

Pyramidal, with nearly a flat base; aperture oblique, rhombic, pearly inside.

World-wide.

* 149. **T. gibberosus,** *Chemnitz; T. inæqualis, Martyn.* Shell imperforate, depressly conoid, opaque white variously stained with orange rust; whorls slopingly convex, obliquely decussated with small nodose ribs and very close set striæ; obsoletely obtusely squamate at the margin; base convexly flattened, ridged; ridges rather distant, crenulated, interstices excavated and striately decussated.—(*Reeve.*)

* 150. **T. viridis,** *Gmelin.* Shell excavately umbilicated, conical, green; whorls seriately plicately grained; grains sometimes small and obtuse, sometimes larger, fewer, and somewhat spinous; base flatly concave, circularly striated.—(*Reeve.*)

CHRYSOSTOMA.

Globose, turbinated, polished, perforated. Umbilicus covered by a strong callosity; whorls few, rounded; columella callous, regularly arched.

151. **C. fulminata,** *sp. nov.* Whorls convex, smooth, umbilicus generally open; colour various, generally pink, with white radiating markings round the sulcus, but sometimes white zig-zag markings extend over the whole shell. Sometimes olivaceous, with or without white markings. Length, ·3; breadth, ·3.

Chatham Islands only.

152. **C. simulata,** *sp. nov.* Whorls convex, faintly spirally striated, umbilicus generally closed. Pink or pinkish brown, generally with white markings on the spire. Length, ·3; breadth, ·25. Rather more produced than the last.

Chatham Islands only.

153. **C. inconspicua,** *sp. nov.* Depressed, whorls convex, faintly spirally striated; umbilicus always open. Brownish green or brown, more or less marked with purplish brown and white. Length, ·15; breadth, ·2.

154. **C. rosea,** *sp. nov.* Depressed, whorls convex, smooth, faintly transversely striated; pinkish white, with three or four narrow pink spiral bands, and some purplish spots on the body whorl near the suture. Length, 1·5; breadth, 23.

Stewart's Island.

POLYDONTA.

Conical; base flat, with a deep axial cavity; mouth sub-rhomboidal; columella twisted.

155. **P. tuberculata,** *Gray, Dieff. N.Z.*, ii., *p.* 239. Spire rather produced, whorls flat, with four spiral rows of rounded tubercles; base spirally striated; columella with a strong fold posteriorly, anterior portion nearly smooth; axial cavity with three spiral ridges. White or purplish white, tubercles pinkish or brownish purple; base white. Length, ·85; breadth, 1·1; angle of spire, 62°.

In the young the body whorl is much angled and surrounded by a marginal row of larger tubercles; the colours also are brighter.

Common. Chatham Islands.

156. **P. chathamensis,** *sp nov.* Whorls flat, with an elevated upper edge, and, together with the base, spirally striated; columella with a slight posterior fold, anterior portion nearly smooth; axial cavity small, smooth. White with pink or brownish purple markings; base white with interrupted pink spiral lines. Length, ·3; breadth, ·35; angle of spire, 70°.

Chatham Islands only.

157. **P. tiarata,** *Quoy; P. elegans, Gray, Deiff. N.Z*, ii., *p.* 238. Whorls slightly convex, often with an elevated upper edge, and six or seven spiral rows of beads; columella with a slight posterior fold,

anterior portion toothed or smooth; axial cavity deep, smooth, conical. White, with brownish purple dots both on the upper surface and on the base; axial cavity white. Length, ·45; breadth, ·6; angle of spire, 75°.

Common. A very variable shell.

* 158. **P. tricarinata,** *Lamark, Anim. sans vert.*, ix., *p.* 180. Shell globose, conoid, imperforate, transversely keeled and granulosely sulcate. Reddish, spotted with white and black; whorls convex, the last circled with three distinct keels; spire short. Diameter, ·9.—(*Lamark.*)

LABIO.

Conical, ovate, solid, grooved, and often granulated; aperture roundish; columella thick, rounded, with a slight prominence or tubercule in front; operculum horny, many-whorled.

Red Sea. India. Australia. Pacific.

159. **L. zealandicus,** *Quoy, l.c.*, iii., *p.* 257; *Monodonta reticularis, Gray, Dieff. N.Z.*, ii., *p.* 238. Sub-globose, whorls spirally distantly grooved and obliquely striated; rough when not worn. Purplish black or purple, spirally tesselated with white; mouth purplish black, outside of columella brownish; when not rubbed, brownish purple. Length, 1; breadth, 1·2.

Very common; variable in shape, the spire being sometimes much depressed.

160. **L. hectori,** *sp. nov.* Sub-globose, conical, roughish. Purplish black; the spire when eroded dark green; anterior portion of body whorl yellow; mouth yellow, with a thin purple ring inside. Length, ·75; breadth, ·8.

West Coast of the South Island.

161. **L. cingulatus,** *Quoy, l.c.*, iii., *p.* 259; *Monodonta angulatum, Gray, Dieff. N.Z.*, ii., *p.* 238. Depressed, conical, with spiral granular ribs. Black, the ribs with a few yellowish spots, aperture white. Length, ·3; breadth, ·5.

Common.

* 162. **L. subrostrata,** *Gray, Dieff. N.Z.*, ii., *p.* 238. Shell conical, sub-orbicular, solid, black, with close wavy longitudinal yellow lines; spire short, whorls five; last large, rounded, hinder part with three to six spiral keels; axis imperforated; throat smooth and silvery.—(*Gray.*)

EUCHELUS.

Turbinated, sub-globose; whorls with granulated spiral ribs; often perforated; columella with a small tooth in front; outer lip thick, internally crenated; operculum sub-circular, of few rapidly enlarging whorls.

163. **E. bellus,** *sp. nov.* Small, imperforate, anterior end of columella with a deep notch. Pinkish white varied with darker; inside white, pearly. Length, ·25; breadth, ·25.

Chatham Islands only.

DILOMA.

Sub-globose, smooth, imperforate; whorls convex; mouth rounded; columella prolonged in front, and extending over the umbilicus; operculum multi-spiral.

164. **D. nigerrima,** *Linnæus, p.* 466; *Trochus melanostomus, Deshayes, Anim. sans vert.*, ix., *p.* 157. Purplish black, lightly spirally striated, interior white, iridescent. Length, ·55; breadth, ·85.

Both islands. Chatham Islands.

THALOTIA.

Conical, turreted, solid, granulated; imperforate; mouth longer than wide; columella sub-truncate, tubercular; outer lip thickened and crenulated within; operculum multi-spiral.

Australia and New Zealand (Gray).

I have not been able to find the name of the species said to come from New Zealand.

ZIZYPHINUS.

Trochiform, conical, imperforate; body whorl angular; mouth quadrangular; columella simple, sometimes terminated by a tooth.

165. **Z. tigris,** *Martyn; Trochus granatum, Lamark, l.c.*, ix., *p.* 145. Rather solid; body whorl ventricose, not much angled, with fine spiral moniliform lines, about eighteen to twenty-five on the body whorl in front of the mouth, from the suture to the keel; columella with a small callosity over the umbilicus. Chestnut, more or less marbled with white. Length, 2·13; breadth, 2·5; angle of spire, 75°.

Cook Strait. Chatham Islands.

166. **Z. selectus,** *Chemnitz.* Like the last, but the spiral moniliform lines are further apart, about ten on the body whorl in front of the mouth, from the suture to the keel, and the beading is larger. Purplish chestnut, varied with darker, often forming a row of spots at the suture. Length, 1·4; breadth, 1·5; angle of spire, 75°.

Cook Strait.

167. **Z. cunninghami,** *Gray.* Thin, whorls flattened; suture obscure; body whorl much angled with fine spiral moniliform lines, about ten on the body whorl before the mouth, from the suture to the keel, beading much smaller than in the last; columella with a large callosity over the umbilicus. Pinkish white, with reddish purple dots on the ribs; base nearly white. Length, 1·35; breadth, 2·2; angle of spire, 85°.

Common.

In the young the body whorl is less sharply angled; there is often a row of purple spots round the suture, and the base is ornamented with interrupted pinkish brown lines.

* 168. **Z. spectabilis,** *Adams.* Shell regularly conoid, rather ponderous; whorls slopingly convex, grain ridged; ridges rather distant, grains large, interstices between the ridges smooth, excavated, flesh-colour, or yellowish; ridges dotted with pinkish red.—(*Reeve.*)

* 169. **Z. scitulus,** *Adams.* Shell umbilicated, tumidly conical, rather thin, orange fulvous, minutely articulated with crimson dots, and here and there flaked with white; whorls convexly sloping, spirally striately ridged; ridge next the suture larger.—(*Reeve.*)

* 170. **Z. punctulatus,** *Martyn; Gray, Dieff. N Z.*, ii., *p.* 237. Shell ovately conical, imperforate, rust white, dotted in rows with red and white; whorls seven, slopingly rounded; gemmed throughout with rows of granules; narrowly canaliculately impressed at the suture; aperture obliquely ovate, nearly circular.—(*Reeve.*)

CANTHARIDUS.

Ovate, conical; whorls slightly keeled; columella with a small tooth in front; outer lip entire; throat smooth; mouth sub-ovate, rather elongate; operculum circular.

Australia.

171. **C. iris,** *Chemnitz; Elenchus iris, Gray, Dieff. N.Z.*, ii., *p.* 239. Whorls slightly rounded, smooth, spirally striated, body whorl more or less keeled. Pinkish, with irregular longitudinal zig-zag red markings, apex often transversely bauded with white. Length, 1·3; breadth, 1·1; angle of spire, 50°.

Common.

The young shell is perforated, but the perforation gets covered over by a callous expansion.

172. **C. purpuratus,** *Lamark*, ix., *p.* 158; *Elenchus purpuratus, Gray, Dieff. N.Z.*, ii., *p.* 239. Whorls slightly rounded, smooth, spirally striated; body whorl slightly keeled; imperforate. Purple, or pinkish purple, with irregular longitudinal zig-zag reddish purple markings. Length, 1·8; breadth, 1·4; angle of spire, 50°.

173. **C. elegans,** *Gmelin; Elenchus elegans, Gray, Dieff. N.Z.*, ii., *p.* 239. Whorls slightly rounded, rough, spirally grooved and obliquely striated; body whorl slightly keeled; imperforate. Rose pink or pinkish white, with longitudinal flexuous streaks of rose pink. Length, 1·1; breadth, ·7; angle of spire, 50°.

ELENCHUS.

Conical, imperforate; spire elevated, pointed; whorls flattened, smooth, polished; aperture oval, sub-triangular; columella with a tooth near the middle; outer lip thickened interiorly.

Australia.

* 174. **E. dilatatus,** *Sowerby, Proc. Zool. Soc.*, 1870, *p.* 251. Shell short, sub-cinereous, rather distantly spirally ribbed, spire short, whorls four, the last broad; aperture dilated, greenish blue, iridescent. Remarkable for the expansion of the last whorl.—(*Sowerby.*)

New Zealand (M. Brazier).

BANKIVIA.

Conical, spire elevated, whorls smooth; aperture sub-quadrangular, not pearly inside; columella twisted, simple.

* 175. **B. varians,** *Beck.* Variable in colour, white, purple, rose, or black; plain or banded, sometimes with longitudinal wavy lines. Length, ·6.

West Coast of the South Island. Tasmania. Cape of Good Hope.

MONILEA.

Orbicular, depressed, largely umbilicated; whorls spirally grooved, the body whorl rounded; umbilicus surrounded by a striated callosity; columella terminated in front by one or two tubercles.

176 **M. zealandica,** *sp. nov.* Spire acute, whorls deeply spirally grooved, some of the ridges sub-granular; umbilicus transversely finely striated. Brownish white, with radiating flexuous bands of brownish purple. Length, ·2; breadth, ·3; angle of spire, 80°.

GIBBULA.

Conical, solid, generally umbilicated; aperture sub-rhomboidal, the angles rounded; columella gradually arched; operculum of many gradually enlarging whorls.

177. **G. sanguinea,** *Gray, Dieff. N.Z.*, ii., *p.* 238. Whorls rather convex, spirally striated; mouth nearly round; imperforate. White, with interrupted bright pink spiral lines. Length, ·2; breadth, ·2; angle of spire, 62°.

178. **G. nitida,** *Adams and Angas, Proc. Zool. Soc.*, 1864, *p.* 36. Whorls slightly rounded, spirally striated; apex obtuse; perforate. Purplish black. Length, ·45; breadth, ·4; angle of spire, 60°.

Common.

Family—Haliotidæ.

Shell spiral, depressed, ear-shaped or trochiform; aperture large nacreous; outer lip notched or perforated; no operculum.

HALIOTIS.

Ear-shaped, with a small flat spire; aperture very wide, iridescent, exterior striated, dull; outer angle perforated by a series of holes, those of the spire progressively closed. Muscular impression horse-shoe-shaped, the left branch greatly dilated in front.

Widely-spread.

179. **H. iris,** *Lamark, l.c.*, ix., *p.* 23. Spire small, obtuse; outer lip continuous and produced beyond the body whorl; columella slightly concave, the posterior end not curved into a spiral. Outside rugose, plicated. Outside pale brownish white; interior dark metallic blue and green, with yellow reflexions and an iridescent play of colours; paler in the young. Breadth, about 6·5 inches.

Common. Chatham Islands.

180. **H. australis,** *Lamark, l.c.*, ix., *p.* 25. Spire large, obtuse, body whorl with obliquely longitudinal plications crossed by fine transverse rough striæ; posterior portion of outer lip not projecting beyond the body whorl; posterior end of columella produced into a

broad spiral. Outside pinkish brown; interior pale, highly iridescent. Breadth, about 3·75.

Common. Chatham Islands.

181. **H. virginea,** *Lamark, l.c.*, ix., *p.* 32. Spire moderate, obtuse, body whorl longitudinally grooved, and irregularly transversely plicated; posterior portion of outer lip not projecting beyond the body whorl; posterior part of columella much curved, but hardly spiral. Outside variegated with green, brown, and white; interior pale, highly iridescent. Breadth, about 2·5.

Not so common as the others. Chatham Islands.

* 182. **H. cunninghamii,** *Gray.* Shell ovate, thin, very large, concavely depressed, left side angulated, perforated at the angle; perforations somewhat tubulous, six (in the young shell seven or eight) open; obliquely undulately plicated, sculptured throughout with minutely wrinkled striæ, left margin rather broad, flattened. Outside reddish brown, variegated with green and darker brown, inside whitish.—(*Reeve.*)

* 183. **H. nævosa,** *Deshayes, Anim. sans vert.*, ix., *p.* 34. Shell ovate, spirally ridged, ridges granulosely scaled, often alternately the larger, obliquely undulately wrinkled; wrinkles more or less swollen; six holes open. Deep red or scarlet red, radiated with yellowish white; or light olive-red radiated with green.—(*Reeve.*)

Australia.

* 184. **H. albicans,** *Deshayes, l.c.*, ix., *p.* 31. Shell somewhat orbicularly ovate, convex, smooth or spirally obsoletely ridged; perforations small, numerous, ten open. Exterior yellowish scarlet, rayed with whitish flames; interior silvery white.—(*Reeve.*)

* 185. **H. cruenta,** *Reeve.* Shell ovate, a little attenuated anteriorly; spire rather elevated, spirally peculiarly striated in a waved and wrinkled manner; perforations somewhat approximated, eight open. Beautifully variegated with white dotted scarlet, and scarlet dotted white.—(*Reeve.*)

* 186. **H. zealandica,** *Reeve.* Shell oblong, rather depressed, spirally irregularly grooved; intermediate ridges obtuse, now broad, now narrow; six holes open. Exteriorly peculiarly marbled with reddish chestnut and red-tinged white.—(*Reeve.*)

* 187. **H. stomatiaformis,** *Reeve.* Shell oblong, ovate, very convex, spirally striated, radiately finely plicated; spire nearly terminal, elevated; five perforations open. Marbled with olive-green.—(*Reeve.*)

* 188. **H. pulcherima,** *Deshayes, l.c.*, ix., *p.* 35. Shell ovato-sub-orbicular, rather convex, reddish chestnut, radiately ribbed, finely transversely striated; spire large, sub-central, sides sub-angled, perforated at the angle; perforations numerous, small, eight open.—(*Deshayes.*)

Sub-order—Edriophthalma.

Eyes sessile.

FAMILY—FISSURELLIDÆ.

Shell conical, apex perforated, or with a notch or slit in the front margin.

FISSURELLA.

Conical, radiately ribbed; apex sub-anterior, or central; anal perforation oblong, sub-apical.

Widely spread.

189. **F. squamosa,** *sp. nov.* Solid, oblong, with strong radiating, more or less squamose, ribs; anal perforation small, apical, margin crenated. Brownish; interior white. Height, ·25; length, ·9; breadth, ·6; anal perforation, ·08.

190. **F. rubiginosa,** *sp. nov.* Conical, ovate, apex sub-anterior, thin, smooth, radiately ribbed; ribs thirteen to seventeen; anal aperture apical, small, covered up from the inside. Outside white; interior pinkish. Height, ·2; length, ·6; breadth, ·5.

Chatham Islands only.

LUCAPINA.

Shell small, depressed, cancellated, with a large sub-central perforation, bordered internally by a callosity.

California.

191. **L. monilifera,** *sp. nov.* Ovate, white, radiated with moniliform ribs and obscurely cancellated; border smooth or crenated. Height, ·2; length, ·6; breadth, ·45.

Stewart's Island, 15 fathoms.

EMARGINULA.

Oval, conical, elevated, the apex recurved; surface cancellated; anterior margin notched; muscular impression with recurved points.

Europe. West Indies. Philippines. Australia.

192. **E. striatula,** *Quoy, Voy. Astrolabe,* iii., *p.* 332. Radiately and transversely finely ribbed; apex posterior, margin crenate; notch long. White. Height, ·4; length, ·75; breadth, ·55; notch, ·15.

Both Islands. Chatham Islands.

Emarginula fissurata, Chemnitz, was said by Favanne to come from New Zealand. It is red, or white variegated with red.

TUGALI.

Oblong, narrowed in front; back elevated, cancellated; apex posterior, recurved; aperture crenulated on the edge, sinuated in front.

Australia.

193. **T. elegans,** *Gray, Dieff. N.Z.*, ii., *p.* 240. White, margin often scarcely sinuated in front. Height, ·25; length, ·8; breadth, ·5.

Both Islands. Stewart's Island. Chatham Islands.

* 194. **T. parmophoroides,** *Quoy.* Shell ovate, sub-pyriform, arched, convex, posteriorly rounded, expanded; anteriorly sub-attenuated, accuminated. White within, pale brown without; radiating riblets, close, rounded.—(*Reeve.*)

PARMOPHORUS.

Elongato-oblong, depressed; apex posterior; margin sinuated in front; smooth and white.

Red Sea. Singapore. Philippines. Australia. Cape of Good Hope.

195. **P. australis,** *Lamark, l.c.*, vii., *p.* 579. Shell solid, sides straight, margin smooth. Length, 2; breadth, 1·1.

North Island and Cook Strait.

* 196. **P. unguis,** *Linnæus.* Shell rather short, straight, broad, rather flattened, smooth, concentrically continuously striated; sides straight; anterior margin widely truncated, very slightly sinuated; anterior area broad, smooth.—(*Reeve.*)

Probably the same as the last.

Family—Tecturidæ.

Shell conical, symmetrical; gill single on the side of the back of the neck; teeth in six longitudinal series.

TECTURA.

Shell convex, apex sub-anterior; margin even, simple.

197. **T. pileopsis,** *Quoy, l.c.*, iii., *p.* 359; *Lottia pileopsis, Gray, Dieff. N.Z.*, ii., *p.* 240. Ovate, very finely concentrically striated; apex recurved, sub-marginal, margin even. Blackish brown, slightly varied with white; interior above the muscular impression brown, below it bluish white; margin black. Height, ·35; length, ·8; breadth, ·65.

Common.

198. **T. fragilis,** *Quoy, l.c.*, iii., *p.* 351; *Lottia fragilis, Gray, Dieff. N.Z.*, ii., *p.* 240. Ovate, depressed, membranaceous, pellucid, concentrically striated; apex recurved, marginal. Green, with sub-concentric brown bands; interior with a green ring round the muscular impression.

Family—Patellidæ.

Shell simple, conical; apex sub-anterior; gill lamellar, on the inner surface of the mantle, forming a more or less complete ring beneath the margin.

PATELLA.

Shell smooth or radiately striated, apex sub-central.

World-wide.

199. **P. inconspicua,** *Gray, Dieff. N.Z.*, ii., *p.* 244. Large, solid, conical, rough outside, with twenty to forty radiating ribs, apex

not recurved, margin slightly crenated. Outside uniform brownish, generally much eroded and covered with algæ; interior brown above the muscular impression, which is white; silvery round the mouth; margin spotted with brownish purple. Height, 1·4; length, 2·7; breadth, 2·2.

In the young the interior is darker and the mouth is rayed with yellowish white.

Common.

200. **P. margaritaria,** *Chemnitz; P. ornata, Deshayes, Anim. sans vert.*, vii., *p.* 542. Oval, conical, more or less depressed, radiately ribbed, apex not recurved, margin crenated. Pale greenish or reddish yellow, with about twelve brownish black rays spotted with white; interior above the musuclar impression purplish black, below silvery rayed with pale yellow and brownish black. Height, ·4; length, 1; breadth, ·7.

Common.

201. **P. octoradiata,** *sp. nov.* Depressed, thin, apex subcentral, smooth, with eight broad ribs projecting far beyond the margin. White. Height, ·2; length, 1; breadth, ·8.

West Coast of South Island. A single specimen only.

202. **P. tramoserica,** *Lamark, l.c.*, vii., *p.* 542. Ovate, depressed, thin, with granular radiating ribs; apex not recurved, margin crenated. Olivaceous brown or dark purple, with red and yellow radiating ribs; interior silvery, tip white or greyish white. Height, ·25; length, 1; breadth, ·85.

Variable in colour.

Common. Australia and Peru.

203. **P. stellifera,** *Lamark, l.c.*, vii., *p.* 535. Ovate, rather depressed, with fine radiating decussate ribs; apex not recurved. Blackish or reddish brown, with radiating white stripes, which sometimes do not reach the margin; interior white, silvery, tip greenish brown. Height, ·25; length, ·95; breadth, ·7.

Found also at the Friendly Islands.

204. **P. imbricata,** *Reeve.* Ovate, rather depressed, with rough squamose radiating ribs, apex slightly recurved; margin nearly smooth. Dark grey; inside silvery, purplish, tip brown. Height, ·5; length, 1·6; breadth, 1·3.

205. **P. pottsi,** *sp. nov.* Ovate, solid, rather depressed, with smooth rounded radiating ribs; apex anterior, slightly recurved; margin slightly waved. Brown or olivaceous, rayed with white in the grooves, and variegated with white round the apex; interior rather silvery, rayed with brown and white, tip yellowish white. Height, 1·1; length, 2·6; breadth, 2·4.

West Coast of the South Island.

206. **P. flava,** *sp. nov.* Ovate, conical, radiately ribbed, apex recurved, margin crenated. Pale yellow, inclining to orange towards

the apex; interior, above the muscular impression, more or less orange; below silvery. Height, 1; length, 2·2; breadth, 1·8.

Amuri Bluff. Stonyhurst.

The young shell is more orange, and has the apex sub-anterior.

NACELLA.

Ovate, conical, thin; apex sub-anterior; mouth simple.

Britain. Cape of Good Hope. Cape Horn.

207. **N. radians,** *Gmelin, p.* 3720, *No.* 144. Oval, narrower in front, depressed, with distant radiating ribs, margin entire but often sub-denticulated by the slightly projecting ribs. Greenish yellow with black markings, either arranged in a radiating pattern or irregularly; interior silvery. Height, ·25; length, 1·2; breadth, ·9.

Abundant. Chatham Islands.

Extremely variable, both in form and colour; often dark brown or purplish brown.

208. **N. flexuosa,** *sp. nov.* Ovate, depressed, not ribbed, but with fine concentric striæ; margin entire. Pale yellowish with deeply waved concentric brown lines; interior silvery. Height, ·6; length, 1·7; breadth, 1·4.

Stonyhurst.

209. **N. earli,** *Reeve.* Oval, narrower in front, depressed, with fine, rather high, radiating striæ, margin crenated. Brownish olivaceous, interior shining silvery. Height, ·3; length, ·95; breadth, ·8.

Bluff Harbour; Wellington Harbour.

210. **N. stellularia,** *Quoy, l.c.*, iii., *p.* 347. Oval, depressed, with small granular ribs. Reddish, with white rays at the apex, or two white lines at the posterior end; interior white. Height, ·3; length, 1·4; breadth, 1·1.

211. **N. argentea,** *Quoy, l.c.*, iii., *p.* 345; *P. decora, Reeve.* Ovate, convex, thin, radiately ribbed; ribs numerous, small, smooth, slightly undulated, obsoletely decussated with concentric striæ; greenish olive or yellow, with distant radiating black or red bands; interior silvery. Height, ·35; length, ·95; breadth, ·75.

Variable in colour and in height, sometimes depressed, sometimes semi-globose.

* 212. **N. floccata,** *Reeve.* Shell ovate, convexly depressed, apex inclined anteriorly; flattened, radiately finely ridged; ridges thread-like, slightly waved, delicately crenulated with concentric striæ. Olive green, profusely sprinkled with white flakes; interior vivid blue green.—(*Reeve.*)

This appears to me to be a variety of *N. argentea.*

* 213. **N. affinis,** *Reeve.* Shell oblong ovate, depressed, apex very anterior, small, rather sharp; radiately ridged and striated, ridges and striæ numerous, obtuse, slightly waved. Dark olive, ornamented with obliquely blood-blotched broad rays; interior sub-transparent, iridescent.—(*Reeve.*)

* 214. **N. cantharus,** *Reeve.* Shell ovate, rather thin, convex, apex very anterior, sharp, hooked, smooth. Black, irregularly blotched with white; interior blackish chestnut.—(*Reeve.*)

FAMILY—CHITONIDÆ.

Shell composed of eight transverse imbricating plates, lodged in a coriaceous mantle, which forms an expanded margin round the body.

CHITON.

Mantle covered with scales; exposed portion of the valves broader than long.

All parts of the world.

215. **C. concentricus,** *Reeve, Conch. Icon., pl.* 16, *f.* 95. Oval; mantle with rather large scales; valves compressed on each side, keeled; posterior margins pointed; terminal and lateral areas closely concentrically ribbed; median areas distinctly longitudinally ribbed; dorsal line smooth. Mantle white or pinkish, irregularly banded with yellowish brown; terminal and lateral areas yellowish brown, median areas white, with yellowish brown ribs. Length, 1; breadth, ·5.

This species is also found in Australia.

216. **C. canaliculatus,** *Quoy, Voy. Astrolabe,* iii., *p.* 394. Oblong; mantle with moderate sized scales; valves compressed on each side and keeled; posterior margins straight, crenulated on their sides; terminal and lateral areas with radiating moniliform ridges; median areas with longitudinal ridges; dorsal line smooth. Mantle pink, with about twenty transverse yellowish pink bands; terminal and lateral areas deep pink; median areas yellowish pink, sometimes longitudinally varied with black. Length, 1; breadth, ·5.

217. **C. pellis-serpentis,** *Quoy, Voy. Astrolabe,* iii., *p.* 381. Oval; mantle with moderate sized scales; valves elevated, rounded, solid, opaque; posterior margins curved, meeting in an obtuse point on the back; terminal areas with radiating moniliform lines; lateral areas of intermediate valves with curved radiating ribs, concave behind, and crossed by curved longitudinal furrows, which are concave upwards; median areas slightly longitudinally striated; dorsal line smooth and polished on the anterior parts of the valves, but striated on the posterior parts. Mantle yellowish or greenish white, with about twenty transverse black bands; valves generally greenish black, passing into yellowish on the back, and with a triangular black spot, with its apex pointing backwards, along the dorsal line of all the intermediate valves. It is generally much eroded, but the size and colour of the scales on the mantle are always sufficient to distinguish it from other New Zealand species. Length, 1·5; breadth, ·75.

Abundant on rocks between high and low watermarks.

Pitt's Island.

218. **C. sinclairi,** *Gray, Dieff. N.Z.,* ii., *p.* 263. Oval; mantle with moderate sized scales; valves elevated and flattened on the sides; posterior margins straight, with a slight central point, and crenulated

on the sides; terminal areas with radiating moniliform ribs; lateral areas with flat, sub-moniliform, radiating ribs, crossed by a few irregular transverse furrows; median areas finely longitudinally striated on the sides, but smooth and polished on the back. Mantle brown, transversely banded with black; valves pale brown, longitudinally varied with paler brown and black. The scales on the mantle are smaller and flatter than those of *C. pellis-serpentis*. Length, 1·35; breadth, ·7.

219. **C. quoyi**, *Deshayes, Anim. sans vert.*, vii., *p.* 509; *C. viridis*, *Quoy* (*nec Chemnitz*), *Voy. Astrolabe*, iii., *p.* 383. Oval; mantle with moderate sized scales; valves elevated, flattened on each side; posterior margins slightly concave, with a small central point; the anterior valve, the greater part of the posterior valve, and the lateral areas of the intermediate valves with fine radiating striæ; median areas very finely longitudinally striated. Generally dark olive green, or blackish green when dry, but sometimes brown, or green rayed with brown, and the mantle is sometimes varied with white. Length, 1·5; breadth, ·75.

Common under stones in pools left by the retreating tide. Found also in Australia.

Perhaps a variety of *C. chilolensis*.

220. **C. sulcatus**, *Quoy, Voy. Astrolabe*, iii., *p.* 385. Oval; mantle with small scales; valves depressed, slighly flattened on each side; posterior margins straight, crenulated on the sides; terminal and lateral areas finely granulate; median areas with fine distant longitudinal ribs. Mantle reddish brown; valves whitish brown, dull. Length, ·4; breadth, ·25.

Specimens from Kapiti are in the Colonial Museum; it is also found in Australia. I do not feel quite sure as to the identification of this species, for I have no Australian specimens for comparison, and the description in *Lamark* is not very definite, but I think that the difference between the two, if any, must be very slight.

221. **C. longicymbus**, *De Blainville; Sowerby, Conch. Illus.*, *f.* 67. Oblong; mantle with very minute scales; valves rounded; posterior margins straight, or slightly concave; terminal areas with fine radiating moniliform lines; lateral areas with radiating ribs crossed by rather deep, curved, transverse furrows; median areas of both terminal and intermediate valves finely punctate. Brown, variously tinted with green, yellow, or whitish, sometimes pink on the back when rubbed; often entirely greenish brown, minutely freckled with yellow; often brown, with a broad white stripe down the back. Length, 1·4; breadth, ·65.

Very variable both in shape and colour.

Common under stones. Pitt's Island. Found also in Australia.

* 222. **C. circumvallatus**, *Reeve.* Shell oblong-ovate, terminal valves and lateral areas of the rest sculptured with concentric ridges; central areas very minutely reticulated; posterior terminal valve umbonated. Blackish red, spotted with black, ligament arenaceous, tesselated.—(*Reeve.*)

Distinguished from *C. longicymbus* by the conspicuous ridge with which it is encircled.

* 223. **C. æreus,** *Reeve.* Shell oblong-ovate, angularly raised in the middle, valves rudely impressly striated throughout, umbonal eminence smooth; dull green; ligament granosely coriaceous.—(*Reeve.*)

* 224. **C. contractus,** *Reeve.* Shell oblong, peculiarly contracted at the extremities, especially the anterior; terminal valves and lateral areas of the rest concentrically granulated; granules solitary; central areas very minutely and closely ridged, ridges curved and conspicuous towards the sides, finer towards the middle, and decussated with oblique striæ. Light bay, flamed in the middle with brown; ligament granosely coriaceous, dark brown.—(*Reeve.*)

* 225. **C. stangeri,** *Reeve.* Shell ovate, terminal valves, and lateral areas of the others, rayed with rows of closely packed square appressed granules; central areas smooth in the middle, closely ridged on each side, interstices rather deep. Yellow and green, tesselated with green spots; ligament squamosely coriaceous.—(*Reeve.*)

226. **C. empleurus,** *Hutton, Trans. N.Z. Inst.*, iv., *p.* 178. Oblong; margin with very minute scales; valves rather elevated and flattened on each side, sub-carinate; posterior margins slightly concave, with a small central point; terminal and lateral areas raised above the rest, minutely punctate; median areas minutely punctate, sometimes with a row of deep longitudinal pits along the anterior edges of the raised lateral areas. Uniform yellowish pink. Length, ·75; breadth, ·3.

Founded on two specimens in the Colonial Museum, locality not stated.

227. **C. rudis,** *Hutton, Trans. N.Z. Inst.*, iv., *p.* 179. Oblong; margin with minute scales; valves elevated, flattened on the sides, not keeled; apex of anterior valve recurved, with its posterior margin slightly convex at the sides, and deeply concave in the centre; posterior margins of intermediate valves straight; posterior valve rather small, apex posterior, pointed and emarginate; anterior valve, and lateral areas, with radiating moniliform ribs; posterior and median areas widely, but rather irregularly, deeply longitudinally furrowed, with narrow ridges between. Margin grey, with broad irregular reddish brown transverse bands; valves greyish brown; interior greyish white. Length, 1·75; breadth, ·75.

TONICIA.

Margin of the mantle simple, naked, nearly smooth, or velvety; last valve entire.

South America. Australia. Greenland.

228. **T. undulata,** *Quoy, Voy. Astrolabe*, iii., *p.* 393. Oval; valves rounded, polished, sub-carinate; posterior margins straight, produced into a rather acute central point; terminal area of anterior valve, and lateral areas of intermediate valves, with indistinct radiating moniliform ridges; posterior valve, and median areas of anterior and intermediate valves with waved transverse striæ. Mantle reddish brown;

valves generally green, inclining, more or less, to yellowish on the back, with the waved striæ brown; sometimes the valves are greyish green, with many of the undulating striæ white. Length, 1·15; breadth, ·55.

Not uncommon under stones at low water. Chatham Islands.

229. **T. rubiginosa,** *Hutton, Trans. N.Z. Inst.*, iv., *p.* 180. Oblong; margin slightly tomentose; valves rather elevated, sub-carinate, flattened on each side; posterior margins straight, produced into an acute central point; lateral areas indistinct, the whole surface rather coarsely granular, the granules smaller on the back. Pink, getting yellowish on the back. Length, ·45; breadth, ·2.

ACANTHOPLEURA.

Mantle covered with long spines, widely spread.

230. **A. ciliata,** *Reeve; A. complexa, Hutton, Trans. N.Z. Inst.*, iv., *p.* 181. Oval; margin broad, velvety, with long spines scattered over it; valves depressed, flattened on each side, sub-carinate; posterior margins not covering the next at the corners, rather convex, and pointed in the centre; anterior valve with radiating moniliform ridges; lateral areas of intermediate plates granulose, with two prominent, radiating, slightly curved ridges on each side; median areas with finely granular transverse waved lines, which pass imperceptibly into the larger lateral granulations; posterior valve small, like the intermediate ones; centres of valves punctate internally. Margin reddish brown, varied with darker; valves greyish, more or less varied with yellowish white, yellow, or brown. Length, 1; breadth, ·5.

Pitt's Island.

231. **A. cælatus,** *Reeve; Tonicia zig-zag, Hutton, Trans. N.Z. Inst.*, iv., *p.* 180. Oblong; mantle slightly tomentose; valves slightly flattened on each side, but not keeled; posterior margins sloping backwards into a point, crenulated on the sides; anterior valve with nine radiating ridges, crossed by fine concentric zig-zag striæ; lateral areas with two, on each side, radiating ridges crossed by fine zig-zag striæ; posterior and median areas with very fine oblique striæ diverging from the dorsal line outwards and forwards, crossed by others diverging outwards and backwards, forming an "engine-turned" pattern. Mantle white; valves greyish black, with a white stripe on each side of the dorsal line; interior greenish blue. Length, ·88; breadth, ·31.

Not uncommon in the South.

232. **A. nobilis,** *Gray, Dieff. N.Z.*, ii., *p.* 245. Mantle rugose, rough, with scattered long tapering brown bristles; valves brown, convex, evenly rounded, with very minute dots like shagreen, the lateral area slightly marked with three or four indistinct rays; inside white. Length, 3.—(*Gray.*)

I have only seen a single valve.

ACANTHOCHÆTES.

Margin of the mantle spinulose, with nine bundles of spines along each side.

Australia. Europe.

233. **A. biramosus,** *Quoy, Voy. Astrolabe,* iii., *p.* 378; *Tonicia corticata, Hutton, Trans. N.Z. Inst.,* iv., *p.* 180. Oval, mantle coriaceous, with a few scattered long spines, and with a row on each side of nine small tufts, consisting of two diverging spines in each; valves flatly triangular, depressed; posterior margins nearly straight, the anterior ones with a small obtuse central point; lateral areas bounded on either side by a flatly nodulose ridge, the space between being obliquely striated, the striæ running outward and backward; median areas rugose without either distinct lines or granules. Margin dark brownish black; valves greyish; inside white. Generally covered over with white coralline growth and small marine algæ. Length, 2; breadth, 1.

Pitt's Island.

* 234. **A. porphyreticus,** *Reeve.* Shell somewhat elongately ovate, valves punctured in the middle, verrucosely rough on each side, with a single ridge along the edge of the lateral areas; anterior terminal valve radiately five-ribbed, posterior small, blunt. Cinereous purple, with a conspicuous yellow spot, dotted with black at the edge, and stained with bright purple in the middle, along the umbonal summit of each valve.—(*Reeve.*)

235. **A. ovatus,** *Hutton, Trans. N.Z. Inst.,* iv., *p.* 182. Ovate, attenuated in front; margin spiny, with nine small bundles along each side; valves flatly triangular, sub-carinate, posterior valve very narrow, apex recurved; posterior margins of the anterior plate sloping backwards into a point, those of the posterior plates nearly straight; anterior valve with ten, and lateral areas with two on each side, radiating nodulose ridges; median areas with slightly waved longitudinal ridges; dorsal line smooth. Mantle pale reddish brown; spines white; valves greenish white; yellowish on the dorsal line. Length, ·6; breadth, ·5.

236. **A. hookeri,** *Gray, Dieff. N.Z.,* ii., *p.* 262. Oblong; mantle spiny, with nine large radiating tufts of spines on each side; valves flatly triangular, sub-carinate; posterior margins slightly convex, with an obtuse central point; terminal and lateral areas granulose; median areas smooth; lateral areas very large. Mantle brown; spines pale green; valves generally greyish black, more or less varied with yellowish; often yellowish or reddish on the dorsal line; occasionally greenish. Length, 1; breadth, ·4.

Not uncommon on stones below low watermark.

KATHARINA.

Valves partly hidden on each side by an expansion of the mantle, sides smooth; uncovered portions of the valves as broad as long.

West Coast of South America.

237. **K. violacea,** *Quoy, Voy. Astrolabe,* iii., *p.* 403. Elongated oval; margin smooth; valves rounded, depressed; posterior margins waved; anterior valve granulose, six-sided, separated by flat nodulose lines; posterior valve small, rounded, granulose; lateral areas small

granulose; dorsal line smooth, with several irregular rows of longitudinal punctures on each side; sides granulose; nine bundles of spines on each side. Mantle brown, valves violet. Length, 1·5; breadth, ·65.

In rock basins near low watermark. Cook Strait.

CRYPTOCONCHUS.

Mantle large, enveloping the greater part of the valves; exposed portions of valves longer than broad.

California.

238. **C. zealandicus,** *Quoy, Voy. Astrolabe*, iii., *p.* 400. Elongated oblong; margin scaly, with a row of short spines round the edge; mantle large, continuous under the apex of each valve; valves depressed, rounded, sub-carinate; posterior margin concave, with an acute point; exposed portions of valves small, smooth on the dorsal line, granulose on each side; nine tufts of spines on each side, situated over the valves. Blackish brown; exposed portion of the valves yellowish; spines yellowish brown. Length, ·45; breadth, ·15.

Two specimens are in the Colonial Museum, locality not stated; obtained by dredging.

239. **C. monticularis,** *Quoy, Voy. Astrolabe*, iii., *p.* 406. Oblong; mantle smooth, covering the whole body except a small linear opening at the apex of each valve; valves depressed, rounded; posterior margins convex and emarginated; exposed portions of valves smooth; nine bundles of spines on each side, situated over the valves. Dark reddish brown when dry; inside greenish grey. Length, 1; breadth, ·45.

Order—Tectibranchiata.

Branchiæ on the side of the back; animal and foot elongate for walking; shell spiral.

Family—Tornatellidæ.

Shell solid, ovate or elongated; operculum horny.

BUCCINULUS.

Ovate, with a conical many-whorled spire; mouth long, narrow, rounded in front; columella with two spiral folds; operculum horny, elliptical, lamellar.

240. **B. kirki,** *sp. nov.* Whorls six, finely and rather distantly spirally grooved, those on the centre of the whorls rather farther apart; columella with one double fold. White. Length, ·8; breadth, ·3.

Omaha.

241. **B. albus,** *sp. nov.* Ovate, whorls seven, rather deeply equidistantly spirally grooved, and lightly transversely striated; columella with a broad double anterior fold, and a smaller posterior one. White. Length, ·35; breadth, ·15.

FAMILY—APLUSTRIDÆ.

Shell convolute, ventricose, often thin, ornamented with bands of brilliant colours; aperture large.

APLUSTRUM.

Smooth, spire short, obtuse; outer lip thin, produced anteriorly as far as the columella, which is straight, twisted and obliquely truncated in front.

242. **A. lineatum,** *Wood.* Concentrically striated, sub-perforate, rather thin. White; body whorl with two rather thin red spiral bands, and several thinner longitudinal red stripes; anterior part pinkish red; interior white. Length, ·8; breadth, ·52.
Hauraki Gulf. Australia.

FAMILY—CYLICHNIDÆ.

Convoluted, cylindrical.

CYLICHNA.

No spire, the apex concave, aperture straight.
243. **C. striata,** *sp. nov.* Small, smooth, white, longitudinally finely striated; aperture scarcely produced above the spire.
Length, ·1; breadth, ·05.

FAMILY—BULLIDÆ.

Shell globular or cylindrical, convoluted, thin; spire concave, umbilicated; aperture long, rounded and sinuated in front; outer lip sharp.

BULLA.

Oval, ventricose, solid, smooth; aperture longer than the shell.

244. **B. oblonga,** *Adams; B. australis, Gray, Dieff. N.Z.*, ii., *p.* 243. Large, elongated, cylindrical, with a few spiral lines near the base. Chestnut brown, faintly varied with grey. Length, 2; breadth, 1·1.
Coasts north of Auckland. Australia.

245. **B. quoyi,** *Gray, Dieff. N.Z.*, ii., *p.* 243; *B. striata, Quoy, l.c.*, ii., *p.* 354. Ovate, smooth, with a few spiral lines near the base. Olivaceous, marbled with purplish grey, and occasionally with white dots. Length, 1·4; breadth, ·9.
Coasts north of Auckland.

FLAMINEA.

Ovate, thin, horny, covered with a thin epidermis, lightly transversely striated.

246. **F. obesa,** *Sowerby; Bulla zealandiæ, Gray, Dieff. N.Z.*, ii., *p.* 243. Sub-globose, imperforated, pellucid. White or pale fulvous. Length, 1; breadth, ·75.

AKERA.

Oval-oblong, thin, flexible; spire short, truncate, whorls distinct.

* 247. **A. tumida,** *Adams.* Shell sub-cylindrical, rather straight, with a single central band of brown; spire contracted, flat, with the last whorl tumid above; aperture rather square in front, contracted behind, with the outer lip a little produced above the centre; columella rather straight, narrow.—(*Reeve.*)

FAMILY—PHILINIDÆ.

Shell internal, or none; bulla form, but slightly convoluted.

PHILINE.

Shell fragile, ovate, convolute, spire none, aperture very large, open.

248. **P. angasi,** *Crosse*(?), *Journ. de Conch.*, 1865, *pl.* 2, *f.* 5. Shell white, slightly iridescent.

Allied to *P. quadripartita*, Adams.

FAMILY—APLYSIIDÆ.

Shell none or rudimentary and covered by the mantle, oblong, trigonal or slightly convoluted. Animal slug-like; foot drawn out into a tail behind; sides with extensive lobes reflected over the back and shell.

APLYSIA.

Shell semicircular, membraneous or sub-cartilaginous; head with four tentacles.

249. **A.,** *sp. ind.* Shell pellucid, whitish, very finely radiately striate.

A single shell from the Bay of Islands.

ORDER—NUDIBRANCHIATA.

Animal destitute of a shell, except in the embryo state; branchiæ always external, on the back or sides of the body.

FAMILY—DORIDÆ.

Animal oblong; gills plume-like, placed in a circle on the middle of the back; tentacles two; skin strengthened with spicula, more or less definitely arranged.

DORIS.

Oval, depressed; mantle large, simple, covering the head and foot; dorsal tentacles two; clavate or conical, lamellated, retractile within cavities; gills surrounding the vent on the posterior part of the back, retractile into a cavity.

All seas.

* 250. **D. carinata,** *Quoy, l.c.*, ii., *p.* 254. Oval, convex, rough, keeled above; dirty yellowish; tentacles truncate, pediculated; branchiæ tuberculated.

ONCHIDORIS.

Gills at the end of the back, surrounding the vent; mantle thick, tuberculous; tentacles retractile; foot oval, thick; organs of generation very distinct, on the right side.

251. **O. tuberculatus,** *sp. nov.* Oval, back covered with large flat tubercles; tentacles pointed; branchiæ plumose; oral tentacles fused into a veil; mantle not covering the head, but covering the foot. Dirty yellowish. Length, 4; breadth, 2.

FAMILY—ÆOLIDÆ.

Animal with papillose gills, arranged along the side of the back; tentacles sheathless, non-retractile; skin smooth, no distinct mantle.

ÆOLIS.

Ovate, dorsal tentacles smooth, oval, slender; gills simple, cylindrical, numerous, depressed and imbricated; foot narrow.

All seas.

* 252. **Æ. longicauda,** *Quoy, l.c.*, ii., *p.* 288. Elongate, graceful, very soft; apex acute; tailed; below brown; branchiæ in many series.—(*Quoy.*)

Cook Strait.

ORDER—PULMONATA.

Breathing free air in a closed chamber lined with pulmonic vessels, and having an opening closed by a valve on the side.

Sub-order—Inoperculata.

No operculum.

FAMILY—ONCHIDIIDÆ.

No shell, mantle completely covering the back; foot straight, much narrower than the mantle.

Marine and fresh water.

ONCHIDELLA.

Eye peduncles short, buccal appendage lobed; mantle smooth or granular, without tufts on the back.

253. **O. nigricans,** *Quoy, Gray, Dieff. N.Z.*, ii., *p.* 248. Body small, oval, carinated above, uniform black; apex of tentacles tuberculate.

Common on rocks between tide marks.

PERONIA.

Eye peduncles short, buccal appendage lobed; mantle covered with small tentacles and tufts.

* 254. **P. patelloides,** *Quoy.* Body orbicular, conical above, covered with pale yellowish green tubercles, margin of veil perforated with sixteen holes.—(*Quoy.*)

FAMILY—SIPHONARIIDÆ.

Shell conical, patelliform.

SIPHONARIA.

Apex sub-central, posterior; muscular impression horse-shoe-shaped, divided on the right side by a deep siphonal groove, which produces a slight projection on the margin.

South Africa. India. Philippines. Australia. West Coast of South America. Pacific Islands.

255. **S. diemenensis,** *Quoy, l.c.*, ii., *p.* 327. Oval, convex, apex sub-central, slightly posterior, with radiating sub-nodular ridges; siphonal groove shallow. Brown; ribs white, covered by a yellowish brown epidermis; interior greyish brown, darker round the margin, where it is spotted with white. Height, ·65; length, 1·8; breadth, 1·15.

Both Islands. Tasmania.

256. **S. zealandica,** *Quoy, l.c.*, ii., *p.* 344. Ovato-orbicular, depressed; irregularly strongly radiately ribbed; apex sub-central. Whitish brown; interior brown, marked with white round the margin. Height, ·15; length, ·75; breadth, ·55.

257. **S. scutellum,** *Deshayes, Mag. Zool.*, 1841, *p.* 35. Oval, convex, irregularly radiately plicate, undulated; apex sub-central, posterior, generally much eroded. Pale brown; interior dark brownish purple, spotted with white round the margin. Height, ·45; length, ·8; breadth, ·5.

Common. Chatham Islands.

258. **S. funiculata,** *Reeve, Conch. Icon., pl.* 2, *f.* 6, *a.b.* Oval, conical, finely radiately ribbed, apex sub-central, margin denticulated interiorly. Pale brown; interior purplish brown, with a narrow white band round the mouth. Height, ·4; length, ·9; breadth, ·6.

Found also in Tasmania and Australia.

259. **S. australis,** *Quoy, l.c.*, ii., *p.* 329. Elongato-ovate, rather convex, with about thirty radiating ribs, apex posterior. Whitish brown; interior pale, marked with brown round the margin. Height, ·25; length, ·6; breadth, ·45.

260. **S. denticulata,** *Quoy, l.c.*, ii., *p.* 340. Oval, convex, apex sub-central, with many radiating smoothish ridges. Pale brown; interior pale, with dark brown radiating bands round the margin. Height, ·3; length, ·75; breadth, ·57.

Found also in Australia and Tasmania.

In New Zealand specimens the radiating brown bands round the interior margin are generally much smaller than in Tasmanian specimens, and often they are almost absent.

* 261. **S. cancer,** *Reeve.* Shell somewhat oblong-ovate, convexly depressed, very irregular, radiately ribbed; ribs strong, rude, sub-corrugate, the three next the siphon distant. Dull purple brown.—(*Reeve.*)

* 262. **S. obliquata,** *Sowerby.* Shell ovately oblong, rather depressed, radiately crookedly ridged, vertex uncinate. Ash-brown.—(*Reeve.*)

* 263. **S. spinosa,** *Reeve.* Shell ovate, rather depressed, apex laterally uncinate, radiately ribbed, ribs rather narrow, profusely squamately spined. Yellowish white.—(*Reeve.*)

FAMILY—AURICULIDÆ.

Shell spiral; pillar generally plaited, body of last whorl usually toothed or plaited; peristome sharp and straight, or expanded, thickened, often toothed or transversely ribbed.

Brackish water.

MELAMPUS.

Shell ovate-conoidal, or ovate, solid, spire rather short; aperture elongated, narrow; columella distinctly plaited, body of last whorl smooth, or furnished with from one to five folds or teeth; peristome straight; right margin acute, smooth within, or furnished with transverse ridges.

Australia. Indian Archipelago. Philippines. Ceylon. Mauritius. South Africa. Madeira. West Indies. North and South America. Sandwich Islands.

* 264. **M. commodus,** *Adams, Proc. Zool. Soc.*, 1854, *p.* 12; *Pfeiffer, Cat. Auric., Brit. Mus., p.* 10. Shell rimate, oblong-ovate, rather solid, slightly shining; chestnut; spire conic, apex pointed; suture bordered; whorls nine, flat, the upper radiately ribbed, the last forming nearly two-thirds of the total length, rather smooth, somewhat turgid above, attenuated at its base; slightly gibbous and striated; aperture nearly perpendicular, acuminately semi-ovate; no plait on penultimate whorl; columella plait short, oblique, somewhat twisted, forming an indistinct angle with the peristome, which is simple, straight; right margin scarcely arcuate, slightly sinuate, furnished within with three transverse ridges; columella margin callous, shining. Length, ·44; breadth, ·2.—(*Pfeiffer.*)

265. **M. adamsianus,** *Pfeiffer, Cat. Auric., Brit. Mus., p.* 17. Shell sub-rimate, ovato-oblong, rather solid, smooth, blackish green; spire convexly conical, pointed; suture linear; whorls nine, flat, the upper ones somewhat plaited, the last forming two-thirds of the total length, indistinctly angled above, marked near the suture with one larger and several narrow pale bands, irregularly sculptured with striæ of growth, rounded in front; aperture nearly perpendicular, narrowly semi-ovate; one middle-sized, compressed, transverse plait on the last whorl; columella plait oblique, produced outwards; peristome straight, bordered with white; right margin sinuate above, furnished within with six or seven short white ridges; columella margin callous, slightly dilated. Length, ·4; breadth, ·2.—(*Pfeiffer.*)

266. **M. zealandicus,** *Adams, l.c., p.* 12; *Pfeiffer, l.c., p.* 17. Shell rimate, conoidally ovate, rather solid, irregularly striated, slightly shining, horn coloured brownish; spire conoidal, acutely mucronate;

suture linear; whorls nine, flat, the last forming about two-thirds of the total length, rather swollen above, somewhat lessened towards the base, with a swollen tubercle; aperture perpendicular, narrowly semi-ovate, rounded in front; one middle-sized, rather transverse plait on the last whorl; columella plait obliquely produced to the margin; peristome acute, bordered with brown; right margin furnished with a white callus, which sends off eight or nine short ridges; columella margin slightly thickened. Length, ·35; breadth, ·2.—(*Pfeiffer.*)

267. **M. costellaris,** *Adams, l.c., p.* 12; *Pfeiffer, l.c., p.* 39. *Auricula zealandiæ, Hector, Cat. Col. Mus.*, 1870, *p.* 98 (*name only*). Shell rimate, ovato-conic, solid, ribbed longitudinally, brown, with irregular pale streaks; spire conic, blunt; suture irregularly impressed; whorls five or six, the upper ones flat or rather excavated, the last forming about four-sevenths of the total length, very obsoletely angled, and girdled with a pale line at its upper circumference, somewhat tuberculate at the base; aperture nearly perpendicular, sinuately ovate; parietal plait one, strong, deep, rather transverse; columella plait a little smaller, produced externally; peristome blunt; right margin sinuated above, then thickened by an internal deposit; columella margin dilated, rather adnate. Length, ·47; breadth, ·26.—(*Pfeiffer.*)

* 268. **M. sulcatus,** *Adams, l.c., p.* 34. Shell sub-rimate, ovate, solid, sculptured above with crowded granular ridges, brown, with three pale bands; spire conic, obtuse; suture linear, slightly canaliculate; whorls five, flat, the last forming two-thirds of the total length, slightly angulated above, then more distinctly grooved spirally, furnished at the base with a very slight keel surrounding the umbilical region; aperture scarcely oblique, semi-ovate, showing the same colour and bands within; parietal plait one, compressed, transverse; columella plait scarcely smaller, rather oblique; peristome straight, sharp; columella margin somewhat spreading in adult specimens. Length, ·5; breadth, ·25.—(*Pfeiffer.*)

CASSIDULA.

Shell rimate, cassidiform, solid; spire short, conoidal; last whorl large, attenuated at the base, provided usually with a keel surrounding the umbilical region; aperture narrow, sinuate; body of the last whorl bearing various teeth; columella plait strong; right margin of the peristome thickened with a longitudinal internal callus, which is sinuated above.

Australia. Indian Archipelago. Philippines. Otaheite. Mauritius. South Africa.

269. **C. mustelina,** *Deshayes; Pfeiffer, l.c., p.* 89. Shell sub-rimate, ovate, conoidal, slightly spirally striated, dark brown, marked usually with four unequal white or bluish bands; spire short, conoidal, rather pointed; suture linear; whorls seven, the upper ones almost flat, the last forming about four-fifths of the total length, ventricose, furnished at the base with a white arched keel, and with a second near the umbilical groove; aperture nearly perpendicular, elongate, rounded

in front; body of the penultimate whorl bearing an indistinct tubercle above, and, near the columella, a compressed plait, scarcely descending; columella plait simple, slightly ascending; peristome white or rose coloured, inflated externally, with the margins united by a very thin deposit; right margin furnished within with a longitudinal crest, which, above the middle, is interrupted by a semicircular notch; columella margin much dilated, spreading. Length, 1; breadth, ·7.—(*Pfeiffer.*)

Singapore and Pulo Penang.

Sub-order—Operculata.

Furnished with an operculum.

FAMILY—AMPULLACERIDÆ.

Shell spiral, globular, umbilicated.
Marine or estuarine.

AMPHIBOLA.

Globular, surface uneven; columella fissured; outer lip channelled near the suture; operculum horny, sub-spiral.
Australia. Pacific Islands.

270. **A. avellana,** *Gmelin; Gray, Dieff. N.Z.*, ii., *p.* 248. Sub-orbicular, rather thick; whorls angled and flattened behind, transversely rugosely plicate; spire very short. Yellowish or reddish brown, generally more or less purple on the spire and keel; interior brownish purple; mouth white. Axis, ·8; breadth, ·95.

Class—Lamellibranchiata.

No head, nor eyes; shell composed of two valves, occasionally with supernumerary pieces; heart with two chambers; nervous system with three principal pairs of ganglia.

ORDER—PHOLADACEA.

Mantle closed, but allowing two more or less elongated siphons to pass out, which are contiguous at the base; the inferior with two pairs of branchiæ.

PHOLADIDÆ.

Shell gaping at both ends, thin, white, brittle; hinge plate reflected over the umbones, and a long curved muscular process beneath each; anterior muscular impression on the hinge plate; pallial sinus very deep.
Boring holes in wood and rocks.

BARNEA.

Shell ovato-oblong; gaping anteriorly; a single lanceolate dorsal accessory piece; hinge margin reflected.

1. **B. similis,** *Gray, Dieff. N.Z.*, ii., *p.* 254. Rather elongate, acute in front, tapering behind; with concentric laminæ which are higher and closer together at the anterior end, where they are crossed by radiating lines, sub-spinose at the crossings; dorsal plate elongate, acute in front, truncated behind. Height, 1; length, 2·5.

Common.

PHOLADIDEA.

Siphons with horny or shelly pieces at their base; shell widely gaping in front, but closed by a callous plate; two dorsal pieces, straight.

Britain. Ecuador.

2. **P. tridens,** *Gray, Dieff. N.Z.*, ii., *p.* 254. Ovate, with a deep central groove; front half with close waved concentric ridges; hinder half with distant regular concentric grooves; front gape ovate, at length closed up, the two hinder processes forming together a cup about as long as broad, each furnished with a sub-marginal and central rib. Height, ·75; length, 1·5.

TEREDO.

Shell globose, gaping anteriorly and behind; valves trilobate, divided by a single transverse groove; hinge margins inflexed anteriorly; interior of valves furnished with a long curved process. Living at the inner extremity of a burrow, partly or entirely lined with shell.

All seas.

3. **T. antarctica,** *sp. nov.* Shell globose, the valves trilobed, ear-shaped behind, lower lobe produced, acute, the interior process for attachment of the pedal muscle dilated at the end; anterior end deeply notched, the notch forming a right angle; outside smooth behind, striated in front by lines parallel to the edge of the notch, the striæ on the lower and posterior part being finer than those on the upper and anterior part, and the interstices with minute cross striæ, while the interstices of the upper striæ are smooth; tube and valves—?

Auckland.

Family—Gastrochænidæ.

Shell equivalve, gaping; valves thin, edentulous, united by a ligament, sometimes cemented to a shelly tube when adult; adductor impressions two, pallial line sinuated.

ASPERGILLUM.

Shell small, cemented to the lower end of a shelly tube, the umbones alone visible externally; tube elongated, closed below by a per-

forated disc with a minute central fissure; siphonal end plain or ornamented with from one to eight ruffles.

Red Sea. Java. Australia.

* 4. **A. novæ zealandiæ,** *Lamark, l.c.*, vi., *p.* 21. Shell with the valves ovate, posteriorly angularly expanded; sheath rude, irregular, somewhat cylindrical; frill indistinct, with two to three rows of tubes, which are short, large, free; disc convex, with the perforations very few.—(*Reeve.*)

FAMILY—GLYCIMERIDÆ.

Equivalve, thick, gaping at both ends; hinge with a rudimentary cardinal tooth; ligament external, solid and prominent, placed upon a more or less strong callosity; pallial impression irregular, sinuated behind.

SAXICAVA.

Oblong, irregular, generally equivalve, inequilateral, slightly gaping at both ends; hinge linear, without teeth or with a rudimentary one on each valve; ligament external; pallial line sinuated, not continuous.

World-wide.

5. **S. arctica,** *Linnæus; S. australis, Lamark, Anim. sans vert.*, vi., *p.* 153; *Hiatella minuta, Gray, Dieff. N.Z.*, ii., *p.* 252. Shell more or less swollen, longitudinally striated. White. Height, ·35; length, ·65. Very variable in shape.

Cosmopolitan.

PANOPÆA.

Equivalve, inequilateral, gaping at each end, thick; ligament external on prominent ridges, one prominent tooth in each valve; pallial impression strong, with a more or less deep sinus.

Europe. Cape of Good Hope. Australia. Patagonia.

6. **P. zealandica,** *Quoy, l.c.*, iii., *p.* 547. Oval, inequilateral, sub-compressed, widely gaping, longitudinally plicated, umbones obtuse, recurved. White. Height, 3·3; length, 4·9; breadth, 2·15.

Common. Chatham Islands.

* 7. **P. solandri,** *Gray, Dieff. N.Z.*, ii., *p.* 255. Oblong, ventricose, rounded in front, rather narrower and truncated behind, smooth. White. Much more ventricose than the last.—(*Gray.*)

FAMILY—CORBULIDÆ.

Inequivalve, thick, closed; hinge composed of a single conical recurved tooth in the right valve, received into an indentation in the left valve.

CORBULA.

Inequilateral, gibbous, rounded in front and produced posteriorly; ligament internal; pallial sinus slight; pedal scars distinct from the adductors.

Widely spread.

8. **C. zealandica,** *Quoy, l.c.*, iii., *p.* 511. Small ovato-trigonal, swollen behind, finely longitudinally striated. Yellowish or pinkish white, interior brownish, margin brown. Height, ·3; length, ·5; breadth, ·25.

Common. Found also in Australia.

* 9. **C. catlowæ,** *Reeve.* Shell oval, thick, rather depressed, smooth, whitish rose or yellowish, posterior side rounded, anterior slightly angular; interior vivid rose colour.—(*Reeve.*)

* 10. **C. adusta,** *Hinds, Voy. Sulphur.* Shell somewhat obliquely triangular, smooth, rather swollen, rounded posteriorly, slightly angulately accuminated anteriorly; reddish brown, covered with a horny epidermis; umbones eroded.—(*Reeve.*)

Rather stouter than the preceding, and less anteriorly accuminated.

FAMILY—ANATINIDÆ.

Interior nacreous, more or less gaping at the extremities; ligament external; cartilage internal, placed in corresponding pits and furnished with a free ossicle.

ANATINA.

Oblong, ventricose, very thin, often translucent, sub-equivalve, umbones fissured, directed backwards; hinge with a spoon-shaped cartilage process in each valve; pallial sinus wide and shallow.

India. Philippines. Australia. W. America.

11. **A. tasmanica,** *Reeve.* Ovate, umbones sub-central, finely longitudinally striated. Height, 2·5; length, 3·8.

From Auckland as far south as Massacre Bay and Otaki. Australia.

LYONSIA.

Left valve slightly larger, thin; cartilage plates oblique, covered by an oblong ossicle; pallial sinus angular; interior sub-nacreous.

Europe. West Indies. India. Philippines. Borneo. Peru.

12. **L. vitrea,** *sp. nov.* Elongately oblong, very thin, slightly gaping and truncated behind; umbones sub-central, smooth, white, finely longitudinally striated; pallial sinus extending to the centre of the shell, rounded. Height, ·5; length, ·75.

THRACIA.

Oblong, slightly compressed, attenuated and gaping posteriorly; cartilage process thick, not prominent, with a crescentic ossicle; pallial sinus shallow.

North Atlantic, from Greenland to the Canaries. China. Australia.

* 13. **T. novæ zealandiæ,** *Reeve.* Shell somewhat triangularly ovate, rather solid, posteriorly rather broadly angled; left valve flat; concentrically rudely plicately striated, especially towards the umbones; umbones rather sharp, a little beaked, whitish, smooth.—(*Reeve.*)

Possibly a variety of *T. australica.*

NEÆRA.

Thin, transparent, generally prolonged into a gaping beak behind; hinge with a small spoon-shaped process in each valve, and a large lateral recurved tooth in the right valve.

Europe. China. Moluccas. Chili. Australia.

14. **N. trailli,** *sp. nov.* Ovate, produced behind, white, with distant concentric laminæ, which become obsolete on the beak; beak rugose. Height, ·2; length, ·4.

Stewart's Island, 14 fathoms.

MYODORA.

Trigonal, rounded in front, attenuated and truncated behind; right valve convex, left flat; interior pearly; cartilage narrow, triangular, between two tooth-like ridges in the left valve, with a free sickle-shaped ossicle; pallial line sinuated.

Australia. Philippines.

15. **M. striata,** *Quoy, l.c.*, iii., *p.* 537. Ovato-trigonal, solid, longitudinally striated, anterior end rounded, posterior sub-angulated and folded; sub-equilateral, apex acute. White; interior pearly. Height, 1·3; length, 1·55.

Common.

The Natives call this shell "pakira."

16. **M. ovata,** *Reeve.* Small, oblongo-trigonal, distantly longitudinally plicated, anterior end rounded, posterior sub-angulated and slightly folded; sub-equilateral, apex acute. Yellowish or pinkish white; interior pearly. Height, ·6; length, ·45.

Stewart's Island. Australia. Philippines.

17. **M. brevis,** *Stutchbury, Zool. Jour.*, v., *p.* 99. Small, thin, trigonal, nearly as high as long, distantly longitudinally plicated; sub-angulated at both ends; sub-equilateral, apex acute. White; pearly inside. Height, ·35; length, ·4.

Stewart's Island, 14 fathoms. Australia.

CHAMOSTRÆA.

Inequivalve, solid, attached by the right valve; left valve flat.

Australia.

18. **C. albida,** *Lamark*, vi., *p.* 585. Right valve keeled, attached by its anterior side; umbones anterior, sub-spiral; left valve with an oblong curved ossicle. Length, 2·5.

Manukau; Kawhia; Cook Strait. Chatham Islands. Australia.

Order—Veneracea.

Animal with two siphons, more or less elongated, and often divided; foot generally compressed, formed for creeping or jumping.

Family—Mactridæ.

Equivalve, trigonal, close, or slightly gaping; ligament triangular, internal, in a deep triangular pit; epidermis thick; hinge with two

diverging cardinal teeth, and usually with anterior and posterior laterals; pallial sinus short, rounded.

MACTRA.

Sub-equilateral, anterior hinge tooth Λ-shaped, sometimes with a small lamina tooth close to it; lateral teeth doubled in the right valve.

World-wide.

19. **M. discors,** *Gray.* Ovato-trigonal, slightly ventricose, smooth, with fine longitudinal striæ; lunule and area plicately striated; anterior side rather shorter, its dorsal line curved outwards; posterior side rather flattened, its dorsal line convex. White; epidermis thin, pale horn colour. Height, 2·5; length, 3.

Common.

* 20. **M. murchisoni,** *Deshayes.* Shell ovate, sub-ventricose, rather solid, white, smooth, covered towards the margin with a straw-coloured epidermis, nearly equilateral, anterior side rounded, posterior rather the longer, slightly angularly produced, angle linearly keeled, lunule very large, wrinkle ridged, umbones close set.—(*Reeve.*)

21. **M. scalpellum,** *Deshayes.* Shell triangularly oblong, thin, very compressed, equilateral, smooth, shining white; extremities rather attenuately rounded, umbones very small, close; lunule and area very narrow, indistinct, plicately striated.—(*Reeve.*)

Much like a *Tellina.*

Stewart's Island.

* 22. **M. donaciformis,** *Gray.* Shell ovately triangular, inequilateral, swollen, semicordate, umbones sharp, opposite, distant, transversely very finely striated; white, beneath a fulvous epidermis, anteriorly obtuse, posteriorly broadly flat and angled, accuminated at the extremity.—(*Reeve.*)

23. **M. æquilatera,** *Reeve.* Trigonal, nearly as high as long, solid, longitudinally striated; lunule smooth; anterior end sub-angulated, slightly flattened above, posterior angled, and flattened above. White, umbones tipped with purplish; interior yellowish, sometimes purplish in the upper part. Height, 1·75; length, 2·25.

Common.

HEMIMACTRA.

Trigonal, more or less keeled behind; cardinal teeth moderate, lateral teeth extended; ligament triangular, sub-marginal near the cartilage plate; pallial sinus small, rounded.

* 24. **H. ovata,** *Gray, Dieff. N.Z.*, ii., *p.* 251. Ovato-ventricose, inequilateral, thin, slightly concentrically wrinkled; rounded in front, rather attenuated and produced behind. White covered with a thin pale brown periostraca, much produced beyond the edge behind; inside yellow; lateral teeth short, very high, and sub-triangular.

West Coast of North Island (Dieffenbach).

MULINIA.

Ovato-trigonal, sub-angular on each side; hinge with a strong cartilage tooth; lateral teeth short, simple; ligament internal, in the cartilage plate; pallial sinus angular.

25. **M. notata,** *sp. nov.* Thick, solid, concentrically striated round the margin, lunule and area plicately rugose, rest smooth; anterior end shorter, attenuated, right valve with two lateral teeth on each side, left valve with the anterior hinge tooth bifid, and the anterior lateral deeply notched; cartilage pit broad and flat; pallial sinus reaching to the centre of the shell. White, with brown spots and dashes; covered with a thin brown epidermis. Height, 2·5; length, 4.

Stewart's Island, 25 fathoms.

DARINA.

Oblong, compressed, rounded and slightly gaping at the two extremities; umbones sub-posterior; hinge with a large cartilage plate; lateral teeth small, joining the cardinal tooth; ligament external, marginal, separated from the cartilage.

26. **D. pusilla,** *sp. nov.* Obtusely trigonal, thin, white, pellucid, smooth, finely longitudinally striated. Height, ·7; length, 1·1.

Cook Strait; Stewart's Island. I have only seen single valves.

LUTRARIA.

Oblong, elongate, rather compressed, sub-equilateral; umbo sub-anterior; hinge with the cardinal teeth distinct; anterior lateral teeth erect, hinder very small.

Europe. Australia. Philippines.

* 27. **L. deshayesii,** *Reeve.* Shell elongately oblong, thinnish, rather narrow, concentrically densely striated, striæ somewhat wrinkle-like; sides equally rounded, the anterior very long, much gaping. Rust-flesh tinged, covered with a greenish olive epidermis.—(*Reeve.*)

* 28. **L. lanceolata,** *Reeve.* Shell compressly flattened, anteriorly angularly attenuated; smooth, or very finely concentrically striated; spoon-shaped tooth of the hinge peculiarly angularly produced, inclined posteriorly, appressed upon an internal radiating rib. Flesh tinged, faintly stained with rust, covered towards the margin with a horny epidermis.—(*Reeve.*)

ZENATIA.

Equivalve, inequilateral, oblong, umbo anterior, sub-marginal, gaping at both extremities, covered by a thick and projecting epidermis; cartilage plate prominent, cardinal teeth distinct, no lateral teeth; pallial sinus deep, horizontal; hinge posterior.

29. **Z. acinaces,** *Quoy, l.c.*, iii., *p.* 545. Thin, compressed, oblong, back rather concave; anterior end very short, rounded; posterior long

rounded, dorsal and ventral lines nearly parallel; longitudinally plicato-striated. Yellowish white, covered with a greyish olive epidermis, which is finely longitudinally striated at the posterior end; interior white. Height, 1·75; length, 4.

Common on the East Coast of the North Island, and at Massacre Bay. Found also in Australia.

Two other species of *Zenatia* (*Z. cumingiana*, Deshayes, and *Z. solenoides*, Deshayes,) are recorded as coming from New Zealand, but I have seen no descriptions of them.

RAETA.

Cordiform, ventricose, thin; sub-angular and slightly gaping behind; cardinal tooth strong, posterior lateral tooth small; ligament sub-external, marginal, not separated from the cartilage.

30. **R. perspicua,** *sp. nov.* Ovate, ventricose and rounded in front, compressed and sub-angular behind; umbones posterior, turned forwards, with broad rounded concentric corrugations that show in the interior, and crossed by fine undulating transverse striæ. Yellowish white. Height, 2; length, 2·75.

VANGANELLA.

Transversely oblong, thin, compressed, covered with a smooth epidermis, sub-equilateral, rounded in front, attenuated and sub-angular behind, with two divergent ribs in the interior; cardinal teeth of the left valve near together, those of the right valve separated; lateral teeth small, thin; ligament sub-external, marginal, cartilage-plate, elongated, not very deep.

31. **V. taylori,** *Gray.* Anterior internal rib starting from the cartilage plate, posterior just inside the posterior adductor impression. Smooth, white; epidermis pale brown. Height, 2; breadth, 4.

Family—Tellinidæ.

Generally with two cardinal teeth in each valve, occasionally with lateral teeth; shell compressed, usually closed and equivalve; muscular impressions rounded, pallial sinus very large; ligament on the shortest side of the shell, sometimes internal.

PSAMMOBIA.

Oval-oblong, equivalve, sub-equilateral, slightly gaping at each end; hinge straight, teeth $\frac{2}{1}$, sometimes bifid; ligament external, prominent; muscular impressions large, equally distant from the hinge.

Europe. India. Pacific.

32. **P. stangeri,** *Gray, Dieff. N.Z.*, ii., *p.* 253. Oblong, solid, rounded in front and rather obliquely truncated behind, concentrically striated. Purplish white, obscurely rayed with darker; interior pinkish purple. Height, 1·5; length, 2·5.

Common.

The Natives call this shell "wahawaha."

33. **P. lineolata,** *Gray, Dieff. N.Z.*, ii., *p.* 253. Elongato-oblong, compressed, rounded in front and slightly angled behind. Purplish pink, with darker concentric bands, and radiating rays of lighter; interior reddish purple. Height, 1·5; length, 3.
Common. Chatham Islands.

34. **P. zonalis,** *Lamark(?)*, vi., *p.* 182. Oblong, rather thin, rounded in front and obliquely truncated behind, with fine concentric striæ, which are deeper and waved at the posterior end; teeth small. Yellowish orange, with concentric bands of darker, and rayed with white. Height, ·5; length, 1.
Stewart's Island.

35. **P. affinis,** *Reeve.* Oblong, rounded in front and rather obliquely truncated behind, with fine concentric striæ, which are slightly waved at the posterior end; teeth strong. Bright salmon colour, paler towards the margin, and with fine waved interrupted radiating striæ of darker. Height, ·5; length, ·9.

HIATULA.

Oval-oblong, compressed, equivalve, sub-equilateral, umbones slightly posterior, rounded in front, more attenuated and sub-carinate behind; hinge straight; teeth $\frac{2}{2}$; ligament external, prominent.
Australia.

36. **H. nitida,** *Gray, Dieff. N.Z.*, ii., *p.* 253. Oblong, thin, pellucid, smooth. Pale violet, covered with a polished horn-coloured epidermis; interior violet. Height, 1; length, 2.
Common.

* 37. **H. siliquæ,** *Hart.* Shell narrowly transverse, thin, equilateral, smooth, flesh white, covered with a shining transparent olive horny epidermis, faintly two-rayed on the posterior side, anterior side rounded, posteriorly obliquely acuminately rounded.—(*Reeve.*)

* 38. **H. incerta,** *Reeve.* Shell oblong transverse, broader posteriorly, thin, inequilateral, smooth, covered with a thin horny epidermis, obscurely two-rayed posteriorly; anterior side rounded, posterior obliquely truncated.—(*Reeve.*)

* 39. **H. nitens,** *Tyron, Am. Jour. Conch.*, v., *p.* 171.
I have seen no description.

TELLINÆ.

Slightly inequivalve, compressed, rounded in front and slightly folded behind; umbones sub-central; teeth $\frac{2}{2}$, laterals $\frac{1}{1}$, most distinct in the right valve; pallial sinus very wide and deep; ligament external, prominent.
World-wide.

40. **T. albinella,** *Lamark*, vi., *p.* 194. Oblong, very thin, pellucid, white, very finely concentrically striated; anterior end rounded

and obsoletely plicated above, posterior end produced, sub-angular, slightly folded; lateral teeth obsolete. Height, 1·4; length, 2·2.

Common.

The Natives call this shell "hohe-hohe."

41. **T. deltoidalis,** *Lamark*, vi., *p.* 206. Ovate, thinnish, white, very finely concentrically striated; anterior end rounded; posterior rather produced, sub-angular, strongly folded; right valve with two cardinal teeth, the posterior bifid, and a small lateral tooth on each side; left valve with one bifid cardinal tooth. Height, 1·4; length, 1·75.

Abundant. Stewart's Island.

42. **T. sublenticularis,** *Sowerby; T. lactea, Gray, l.c.*, ii., *p.* 254, *ex parte.* Sub-orbicular, rather thick, strongly concentrically striated; anterior end rounded; posterior end shorter, very obtusely sub-angular, slightly folded; right valve with two slight cardinal and one strong lateral tooth on each side; left with two cardinal teeth, and a notch on the hinge plate near the posterior end of the ligament. Yellowish white, umbones yellow, interior white round the margin and bright yellow between the muscular impressions and up to the umbones. Height, 1·5; length, 1·5.

Chatham Islands.

43. **T. decussata,** *Lamark*, vi., *p.* 205. Sub-orbicular, thickish, rather strongly concentrically and finely transversely striated; anterior end rounded; posterior end shorter, obtusely sub-angular, scarcely folded; right valve with two and left valve with one bifid cardinal tooth, lateral teeth obsolete. White. Height, ·57; length, ·7.

West Coast of the South Island.

44. **T. lintea,** *sp. nov.* Oval, thin, pellucid, very finely concentrically and transversely striated; anterior end rounded, posterior end longer, sub-angular, scarcely folded; right valve with two and left valve with one cardinal tooth; lateral teeth obsolete. White. Height, ·6; length, ·82.

Stewart's Island.

* 45. **T. subovata,** *Sowerby.* Shell snow white, half pellucid, equally compressed, rather squarely ovate, smooth, not flexuous; posterior side rather short, with the dorsal margin sloping, truncated at the end; posterior angle nearly obsolete; ventral margin rather straight; anterior side oblong, dorsal margin sloping, excavated near the umbones, very obtusely angular at the end; cardinal teeth small, no lateral teeth; ligament partly imbedded.—(*Reeve.*)

46. **T. ticaonica,** *Deshayes, Proc. Zool. Soc.*, 1854, *p.* 358. Oval, thin, pellucid, smooth, compressed, anterior end rounded; posterior shorter, obliquely truncated, sub-angular, folding obsolete. Pale yellow or rosy pink. Height, ·3; length, ·5.

Stewart's Island, 14 fathoms. Australia.

MESODESMA.

Oval or sub-trigonal, thick, compressed, closed; ligament internal,

in a deep central pit; a minute anterior hinge tooth and ½ lateral teeth in each valve; muscular scars deep, pallial sinus small.

West Indies. India. Chili. Australia.

47. **M. chemnitzii,** *Deshayes, Anim. sans vert.*, vi., *p.* 134. Ovato-oblong, sub-equilateral, thick, white, smooth, covered with a thin pale brown epidermis; ligament plate deep, nearly vertical; a strong anterior hinge tooth in the left valve; lateral teeth sub-equal; pallial sinus small. Height, 1·5; length, 2 25.

Abundant. The Natives call this shell "kokota," or "pipi."

48. **M. cuneata,** *Lamark*, vi., *p.* 112; *M. sub-triangulata, Gray, Dieff. N.Z.*, ii., *p.* 252. Trigonal, solid, smooth, posterior end very short, sub-truncated; white, covered with a thin light brown epidermis; ligament plate rather deep, slightly inclined to the front; the posterior lateral tooth of the left valve higher than the anterior; pallial sinus moderate. Height, 2·25; length, 3·25.

Abundant. Chatham Islands.

The Natives call this shell "tuatua."

* 49. **M. ventricosa,** *Gray, Dieff. N.Z.*, ii., *p.* 252. Ovate, wedge-shaped, truncated behind, thin, ventricose, opaque white, smooth, slightly concentrically striated; covered with a thin nearly transparent horn-coloured epidermis; edge thin; lateral teeth short, smooth, compressed, close to the cartilage pit, the front one of the left valve the largest; pallial sinus not quite reaching to the centre of the disc.—(*Gray.*)

50. **M. elongata,** *Quoy, l.c.*, iii., *p.* 518. Ovato-trigonal, thick, rather flattened, posterior end shorter, attenuated, sub-angular, plicated; anterior end rounded; slightly gaping at both ends, smooth, concentrically striated; cartilage plate produced, inclining backwards; hinge teeth obsolete; anterior laterals notched; pallial sinus deep, reaching nearly to the centre of the shell. White or yellowish, with a thin pale brown epidermis. Height, 2·75; length, 4·5.

* 51. **M. lata,** *Reeve.* Shell triangularly ovate, broad, compressed, concentrically densely irregularly striated, striæ more grooved at the sides; posterior side rounded, anterior much shorter, angularly truncated; umbones rather flattened. Whitish, covered with a pale yellow horny epidermis.—(*Reeve.*)

* 52. **M. ovalis,** *Reeve.* Shell oblong oval, rather thin, compressed towards the margin, nearly equilateral, posterior side a little the narrower; shining white; rather obscurely striated; partially covered with a blackish epidermis.—(*Reeve.*)

* 53. **M. spissa,** *Reeve.* Shell triangularly oblong, thick; anteriorly rather sharply angled and truncated; posteriorly rounded; compressed at the umbones; posterior area rather broad, sub-concave; light fuscous white, irregularly striated.—(*Reeve.*)

* 54. **M. novæ zealandiæ,** *Reeve.* Shell oblong ovate, transverse, rather solid, nearly equilateral, sides rounded, anterior rather the shorter; whitish, irregularly striated, covered with a thin fulvous white shining horny epidermis.—(*Reeve.*)

FAMILY—VENERIDÆ.

Shell regular, closed, sub-orbicular or oblong; ligament external; hinge usually with three diverging teeth in each valve; muscular impressions oval, polished; pallial line more or less sinuated.

VENUS.

Oval, thick, inequilateral, swollen; hinge with three cardinal teeth, simple or bifid, in each valve, and a small anterior lateral tooth; transversely grooved or lamellate, margin finely crenulated; pallial line short and sinuous, always oblique.

Europe. Indian Ocean. Red Sea. China. Philippines. Brazil. Peru. Australia.

* 55. **V. tuberosa,** *Deshayes, Cat. Conch., Brit. Mus., p.* 99. Cordato-globose, inequilateral, thick, solid, chaffy, with regular, concentric, thick, convex, broad, tuberculous ribs; tubercles unequal, the posterior ones larger, obliquely diverging, median obsolete; umbones large, swollen, cordate, longitudinally striated; lunule brown, broadly cordate, flat, impressed, finely striated; ligamental area excavated, elongato-lanceolate; marked with large transverse spots.—(*Deshayes.*)

New Zealand (British Museum).

56. **V. oblonga,** *Gray, Dieff. N.Z.*, ii., *p.* 249. Ovato-oblong; both ends obtuse; very slightly radiately striated, and with thick, obtuse, rounded, concentric laminæ, which are higher and rather thinner at each end; lunule ovato-cordiform, striated, deeply edged; margin finely crenulated, pallial sinus small, broad, triangular. White with a few red rays near the umbo; interior white. Height, 1·5; length, 1·75.

Stewart's Island. Wellington.

57. **V. zealandica,** *Gray, Dieff. N.Z.*, ii., *p.* 249. Ovato-cordate, ventricose, solid, with close, regular, slightly elevated, concentric laminæ, which are higher at each end; lunule large, ovato-cordate; margin finely crenulated. Brown, or brownish white, interior white. Height, 1·8; length, 2·3.

CHIONE.

Oval; sub-trigonal; hinge with two or three cardinal teeth in each valve, but no anterior lateral tooth; pallial sinus short, broad, triangular.

58. **C. lamellata,** *Lamark, Anim. sans vert.*, vi., *p.* 349. Oval, angled in front, with distant transverse lamellæ which are striated on the outside, and recurved and fringed in the adult. White. Height, 1·5; length, 2·25.

Two single valves only.

59. **C. yatei,** *Gray, Dieff. N.Z.*, ii., *p.* 250. Ovate, sub-quadrate, compressed, inequilateral; anterior end short, sub-angulated; posterior truncated; with thin, concentric, erect, distant lamellæ, which are much higher and dentate at the posterior end; lunule lanceolate, imbricato-

striate. Pale yellowish or brown, purplish at the umbones. Height, 1·8; length, 2·1.

Common on the coasts of the North Island, and Massacre Bay.

The Natives call this shell "pukauri."

60. **C. costata,** *Quoy, l.c.*, iii., *p.* 521. Oval, swollen, inequilateral, rugose, truncated behind; with thick radiating ribs crossed by concentric striæ. White, sometimes yellowish on the umbones; interior white, with the apex, and generally the posterior end, purple. Height, 1·2; length, 1·55.

Common.

The Natives call this shell "kaikai-kororo."

* 61. **C. lima,** *Deshayes, l.c., p.* 137. Oval, sub-quadrate, pale, sparingly variegated with brown, radiately ribbed; ribs rounded, serrated, concentrically ridged, ridges on the ribs acuminate; dorsal margin lined with brown, slightly declining, in front greatly declining; lunule impressed, fulvous; ventral margin rounded.—(*Deshayes.*)

New Zealand (Sowerby).

62. **C. stuchburyi,** *Gray, Dieff. N.Z.*, ii., *p.* 250; *Venus zealandica, Quoy, l.c.*, iii., *p.* 522. Ovato-cordiform, sub-trigonal, swollen, thick, radiately ribbed, and with distant concentric lamellæ, which are higher on the anterior end; posterior end smooth, both the ribs and the lamellæ obsolete; pallial sinus short, broad, trigonal; hinge plate curved and strongly sinuated; lunule not margined. Reddish brown, paler behind, interior bluish white, with more or less dark purple on the posterior end. Height, 1·75; length, 2.

Common. Chatham Islands. Kerguelan's Land.

The Natives call this shell "huai" or "pipi."

63. **C. dieffenbachi,** *Gray, Dieff. N.Z.*, ii., *p.* 250. Ovato-cordiform, sub-trigonal, swollen, thick, radiately ribbed, and with distant concentric lamellæ, which are higher at the anterior end; posterior end nearly smooth; pallial sinus short, broad, trigonal; hinge plate nearly straight; lunule not margined. Pale yellowish brown; interior yellowish, with more or less purple on the posterior end. Height, 1·75; length, 2.

Common.

Perhaps only a variety of the last, but the ribs and lamellæ are stronger, and there is less purple in the interior.

64. **C. crebra,** *sp. nov.* Ovato-cordiform, sub-trigonal, very thick, swollen, with rather close concentric striæ, which are crenulated at the anterior end by fine transverse striæ; posterior end truncate; umbones large, much curved forwards; lunule cordate, pallial sinus short, broad, trigonal, deeply margined. Brown; interior white. Height, 1·75; length, 1·9.

65. **C. mesodesma,** *Quoy; Venus mesodesma et crassa et denticulata et violacea, Quoy, l.c.*, iv.; *V. spissa, Deshayes, Anim. sans vert.* vi., *p.* 373; *V. spurca, Sowerby.* Ovate, sub-trigonal, rather compressed, sub-equilateral, longitudinally grooved; lunule lanceolate. White or brown, with radiating bands or zig-zag lines of brown, or purplish

brown; interior white in the centre with more or less violet round the margins; very variable in colour. Height, ·7; length, 1·1.
Common. Philippines and Valparaiso.

66. **C. gibbosa,** *sp. nov.* Ovato-trigonal, gibbous, sub-equilateral, longitudinally grooved, lunule cordate. Yellowish white; interior white in the centre with more or less brownish purple round the margin. Height, ·55; length, ·65.
A single right valve only, but common as a fossil at Wanganui.

* 67. **C. paupercula,** *Deshayes, Cat. Conch., Brit. Mus., p.* 158. Sub-cordate, smooth, sparingly marked with reddish spots and veins on a brownish ground.
New Zealand (British Museum). Australia.

68. **C. alatus,** *Reeve.* Solid, nearly smooth, broadly rayed with pale brown, with a few erect ridges at the posterior side. The young shells are more or less distantly ridged throughout. Length, 2·25.
Porirua (G. F. Angas). Australia.

CALLISTA.

Ovato-oblong; a small, anterior, lateral tooth; pallial sinus broad, oblong, profound, horizontal; margin entire; three cardinal teeth in each valve.

69. **C. multistriata,** *Deshayes, l.c., p.* 64. Oval, sub-elongate, finely concentrically striated, anterior end shorter, posterior sub-acuminate; lunule ovate, reddish. Variegated and interruptedly radiated with brown, fulvous, or pink. Height, ·55; length, ·85.

70. **C. disrupta,** *Deshayes, l.c., p.* 69. Oval, sub-compressed, finely concentrically striated; anterior end rather short, posterior sub-acuminate; lunule excavated, dorsal margin arched, variegated with large brownish purple spots. Yellowish white, spotted and interruptedly rayed with yellowish brown, or purple. Height, ·9; length, 1·05.
Stewart's Island. Australia.

DOSINIA.

Orbicular, compressed; pallial sinus oblique, triangular; hinge large, with three cardinal teeth in each valve, and an anterior lateral tooth; shell ornamented with concentric striæ.

71. **D. anus,** *Philippi; Arthemis australis, Gray, Dieff. N.Z.,* ii., *p.* 249, *nec Venus australis, Quoy.* Orbicular, longer than high, with close elevated concentric laminæ, decreasing in number towards each extremity, where they are higher and reflexed towards the umbones; lunule cordate, deeply impressed, lamellate; margin of tooth plate much sinuated, anterior cardinal tooth striated; pallial sinus horizontal, the angle pointing below the anterior adductor impression. Pale pinkish brown; interior white, getting violet round the margin. Height, 2·45; length, 2·6.
Common.

72. **D. subrosea,** *Gray, Dieff. N.Z.*, ii., *p.* 249. Orbicular, rather longer than high, closely concentrically striated, the striæ decreasing in number and getting rather higher at each end; lunule cordate, deeply impressed, striate; margin of tooth plate very slightly sinuated; anterior cardinal tooth slightly striated or smooth; pallial sinus ascending, the angle pointing at the anterior adductor impression. Pale pinkish white, sometimes pinker at the umbones. Height, 1·9; length, 1·95.

Common. Chatham Islands. Persian Gulf (?).

Very like *D. japonica*. The Natives call this shell, and also *Tapes intermedia*, "hakari."

CYCLINA.

Orbicular, thin; pallial sinus oblique, triangular; hinge moderate of three cardinal teeth in each valve, but no anterior lateral tooth; shell smooth.

73. **C. kroyeri,** *Philippi.* Orbicular, rather compressed, very finely concentrically striated, the striæ more distant and more elevated towards the posterior end, thin; umbones small, uncinate; lunule cordate, impressed, margined; ligament sub-enclosed; posterior tooth of the right valve large, deeply bifid. White. Height, 1; length, 1.

Also found in Chili and Peru.

TAPES.

Ovato-oblong, inequilateral, margin entire; three cardinal teeth in each valve, simple or bifid; pallial sinus deep, oblong, horizontal.

74. **T. intermedia,** *Quoy, l.c.*, iii., *p.* 526. Ovate, transverse, sub-truncated posteriorly, concentrically striated, decussated by very fine radiating striæ; lunule lanceolate, broad; hinge three-toothed, two of which are bifid. Brownish or yellowish white; interior white, or grey, more or less marked with violet at the posterior end. Height, 1·75; length, 2·25.

Common.

The young shell is yellowish, more or less marked with fine purplish brown waved lines The Natives call this shell, and also *Dosinia subrosca*, "hakari."

* 75. **T. fabagella,** *Deshayes, Proc. Zool. Soc.*, 1853. Ovate, inequilateral, rather compressed, thin, fragile; anterior end shorter, obtuse; posterior broader, obliquely truncated; dorsal margin straight, ventral arched; finely concentrically striated, much fewer and lamellate at the posterior end; front and middle finely radiately striated; umbones small, quite smooth; pallial sinus deep, trigonal, base broad. White both inside and outside. Height, ·5; length, ·75.

76. **T. galactites,** *Lamark, l.c.*, vi., *p.* 359. Ovate; attenuated in front and truncated behind, with strong concentric laminæ, which are obsoletely decussated by very fine radiating lines. Yellowish white; interior white, yellowish behind. Height, 1·4; length, 1·9.

Chatham Islands. Australia.

There are no New Zealand specimens in the Colonial Museum.

VENERUPIS.

Irregular in shape, inequilateral, gaping behind, three teeth in one valve and two or three in the other, pallial sinus deep and broad.

77. **V. reflexa,** *Gray, Dieff. N.Z.*, ii., *p.* 250. Elongato-oval, extremities obtuse, with rather distant concentric lamellæ, higher and rather reflexed at the posterior end; interstices longitudinally striated, occasionally sub-decussate; umbones striated; three hinge teeth in each valve, the two posterior in the right, and the central tooth in the left valve bifid. White or brownish; inside white with a purple spot at the posterior end. Height, ·8; breadth, 1·4.

Chatham Islands.

Very like *V. exotica*, Lamark, from Australia.

78. **V. brevis,** *Quoy, l.c.*, iii., *p.* 534. Ovato-quadrangular; umbones smooth; margin strongly plicated; concentrically lamellate, interstices longitudinally striated; three teeth in the left valve and two in the right, the posterior bifid. White or brownish, inside white with a purple spot at the posterior end. Height, ·75; length, 1.

Chatham Islands only. Tasmania.

Family—Petricolidæ.

Ovate, thin, swollen, inequilateral, equivalve, gaping at both ends; teeth two in each valve, unequal, the larger bifid; pallial line remote from the margin in front, broad and deeply sinuated behind.

PETRICOLA.

Ovate, transverse, thin, hinge broad.

* 79. **P. serrata,** *Deshayes, Proc. Zool. Soc.*, 1853. Elongate, very broad, cylindrical; dirty reddish; extremities obtuse, gaping; longitudinally ridged, the ridges larger and denticulated at the anterior end, thin in the middle, and more numerous and undulating at the posterior end; valves thin; interior dirty white; pallial sinus elongate, apex obtuse, base broader.

New Zealand (Cuming).

Family—Cardiidæ.

Cordate, swollen, equivalve; cardinal teeth irregular; laterals remote, or none; pallial line simple; ligament external; generally radiately ribbed, rarely smooth; posterior differently sculptured to the front and sides.

CARDIUM.

Ventricose, umbones prominent, margins crenulated; pallial line more or less sinuated; umbones sub-central.

World-wide.

80. **C. striatulum,** *Sowerby; C. pulchellum, Gray, Dieff. N.Z.*, ii., *p.* 252, *nec Reeve.* Sub-cordate, rather ventricose, thin, rosy white varied with red, umbones generally white; interior white varied with

red, finely radiately ribbed, those on the hinder margin spinulose. Height, ·75; length, ·87.

Cook Strait; Stewart's Island, 15 fathoms.

FAMILY—ISOCARDIIDÆ.

Cordate, swollen, umbones sub-spiral; hinge with two cardinal and two lateral teeth in each valve; anterior lateral tooth rudimentary; pallial line simple.

VENERICARDIA.

Equivalve, inequilateral, sub-orbicular, generally with radiating ribs; cardinal teeth oblique, directed to the same side.

Warm seas.

81. **V. australis,** *Quoy; Gray, Dieff. N.Z.*, ii., *p.* 256. Sub-orbicular, inequilateral, swollen, with about twenty-two nodulose radiating ribs, the nodules on the hinder side sub-spinose; lunule cordate, umbones oblique, recurved; margin plicated. Pale brownish white; interior white, more or less marked with rosy or purple. Height, 1·5; length, 1·75.

Common. Chatham Islands. Stewart's Island.

The young shell is slightly marked with reddish brown, and all the ribs are sometimes sub-spinose. The Natives call this shell "purimu."

82. **V. zealandica,** *Potiez and Michaud, Gall. des Moll.*, 1838, *p.* 166. Sub-orbicular, rather compressed, with about sixteen sub-nodulose radiating ribs; lunule lanceolate; umbones rather oblique; margin plicated. Brown; interior brownish white. Height, ·45; length, ·45.

ORDER—LUCINACEA.

Mantle lobes free below, united behind, without any siphonal opening; foot below, elongated and generally cylindrical.

FAMILY—LUCINIDÆ.

Orbicular, free, closed; hinge teeth one or two, laterals ¼ or obsolete; pallial line simple; muscular impressions elongated rugose; interior dull, obliquely furrowed.

LUCINA.

White, umbones depressed, lunule distinct, ligament semi-internal, anterior muscular impression elongated within the pallial line, posterior oblong.

Widely spread.

83. **L. divaricata,** *Lamark, Anim. sans vert.*, vi., *p.* 226. Orbicular, sub-globose, with thin undulating bifarious striæ, margin even, no lateral teeth. Height, 1·12; length, 1·25.

Common. Chatham Islands. India. Africa. North America.

CRYPTODON.

Inequilateral, sub-orbicular, thin, smooth; at the posterior end a depression from the umbones to the margin; lunule large, sub-oval; a

single cardinal tooth in the right valve; anterior muscular impression double.

Widely spread.

84. **C.,** *sp. ind.* Anterior margin concave, umbones rather pointed and bent forward, translucent, inflated, white. Height, ·38; length, ·38.

Stewart's Island.

I notice, in *Woodward's Manual of the Mollusca*, that a species of *Cryptodon* is known from New Zealand, but I have not been able to ascertain its specific name.

FAMILY—UNGULINIDÆ.

Sub-orbicular, closed; hinge of two diverging bifid cardinal teeth, without laterals; ligament marginal.

MYSIA.

Equivalve; two unequal cardinal teeth in each valve; the anterior of the left and the posterior of the right bifid; ligament external.

85. **M. zealandica,** *Gray, Dieff. N.Z.*, ii., *p.* 256. Rather compressed, smooth, very slightly concentrically striated, rather solid; opaque white. Height, ·75; length, ·75.

Massacre Bay.

86. **M. globularis,** *Lamark, l.c.*, vi., *p.* 231. Orbicular, inflated, umbones rather prominent; very finely concentrically striated, thin, pellucid. Horny white. Height, 1; length, 1·12.

Stewart's Island, 14 fathoms. Australia.

87. **M. novæ zealandiæ,** *Reeve.* Orbicular, very much inflated, umbones scarcely prominent; strongly concentrically striated, umbones smooth; rather solid. Dirty white. Height, ·4; length, ·4.

Kapiti; Cook Strait.

FAMILY—ERYCINIDÆ.

Thin, often transparent, and sometimes gaping; hinge straight, with one or two cardinal teeth; lateral teeth compressed or none.

KELLIA.

Sub-orbicular, sub-equilateral, closed, smooth or concentrically striated; one valve with two cardinal teeth near together and a distant lateral tooth; the other with a single concave cardinal and a distant lateral tooth; ligament internal or sub-marginal.

Widely spread.

88. **K. cycladiformis,** *Deshayes(?), Trait élém., pl.* 11, *ff.* 6–9. Ovato-orbicular, inflated, smooth, pearly white, covered with a thin yellowish olive epidermis. Height, ·4; length, ·5.

Stewart's Island. Australia.

PYTHINA.

Equivalve, equilateral, umbones small, left valve with two small

unequal teeth and two strong lateral teeth, right valve with a small central tooth, and two bifid lateral teeth; two ligaments.

Australia. Philippines.

89. **P. stowei,** *sp. nov.* Transversely oval, thin, white, pellucid, with rather strong ribs divaricating from the centre and crossed towards the margin by a few distant concentric grooves; interstices slightly rugose; margin crenulated at each end. Height, ·3; length, ·5.

Islet Reef, Cook Strait; two left valves only.

FAMILY—SOLEMYADÆ.

Elongated, equivalve, very inequilateral, gaping, invested in a thick epidermis.

SOLEMYA.

Cylindrical, ligament concealed, pallial line obscure; umbones posterior; one compressed very oblique cardinal tooth in each valve; epidermis dark and horny, extending beyond the margin.

Atlantic. Mediterranean. Australia.

90. **S. australis,** *Lamarck, l.c.*, vi., *p.* 124. Dark brown, rayed with paler, interior greyish. Height, ·7; length, 1·9.

Common. Stewart's Island. Australia.

FAMILY—CRASSATELLIDÆ.

Thick, triangular or cordiform, oblong, generally covered with a brown epidermis; often ornamented with concentric striæ; hinge thick, large, and solid.

GOULDIA.

Equivalve, trigonal or sub-trigonal, with concentric striæ or lamellæ; lunule distinct; two cardinal teeth in one valve and one in the other; two anterior lateral teeth in each valve; pallial line simple.

91. **G. isabella,** *sp. nov.* Oblong, obtusely trigonal, compressed, equilateral, smooth, with concentric grooves, which get irregular at the posterior end, lunule lanceolate; ligament small, sub-marginal; pallial line very slightly sinuated at the posterior end. Pinkish fawn colour, paler and yellower on the umbones, and often marked with brown longitudinal bands, which are horizontal in the centre but slope outward and downward at each end, crossing the ribs; interior yellow, pink round the margin. Height, ·55; length, ·75.

MYTILICARDIA.

Elongated, very inequilateral, with projecting squamose ribs; anterior cardinal tooth triangular and diverging, posterior cardinal double in the left valve, no anterior laterals.

92. **M. excavata,** *Deshayes, Proc. Zool. Soc.*, 1852, *p.* 100. Elongate, transverse, irregular in shape, thick, broadly radiately ribbed, ribs scaly. Yellowish white, covered with a brown epidermis; inside white, getting brown at the posterior end. Height, ·75; length, 1·5.

Common. Stewart's Island. Chatham Islands. Australia.

CARDITA.

Oblong, inequilateral, thick; hinge thick, with one or two very unequal cardinal teeth, oblique behind, in each valve.

* 93. **C. tridentata,** *Say.* Shell rather orbicular, nearly equilateral, thick; whitish, stained with rose colour and covered with a thin yellowish epidermis; longitudinal ribs two or three and twenty in number, thickly ornamented with rude, rather nodulose, concentric cross ridges, which do not penetrate into the interstices; interior white, sometimes tinged with rose colour.—(*Reeve.*)

FAMILY—MYTILIDÆ.

Equivalve, oval or elongated, closed, umbones anterior, epidermis thick and dark, often filamentose; ligament internal, sub-marginal, very long; hinge edentulous; pallial line simple; anterior muscular impression small and narrow, posterior large, obscure.

MYTILUS.

Wedge-shaped, rounded behind; umbones terminal, pointed; hinge teeth minute or obsolete; pedal impressions two in each valve, small, simple, close to the adductors.

World-wide.

94. **M. magellanicus,** *Lamarck, l.c.*, vii., *p.* 37. Oblong, subtrigonal, angled, uncinate, with thick longitudinal undulating granulose ribs; bluish or reddish purple, interior violet; a single small tooth in the right valve. Height, 1·65; length, 3.

Common from Cook Strait southwards. Chatham Islands. South America.

* 95. **M. polyodontes,** *Quoy, l.c.*, iii., *p.* 462. Similar to the last, but with eight or ten nearly equal teeth at the extremity of the hinge.

* 96. **M. hirsutus,** *Lamarck, l.c.*, vii., *p.* 38. Dark brown, elevately radiately striated throughout, and clothed with a long fibrous epidermis, the shafts of which are beset with small prickly spines. Interior iridescent, green and purple. Length, 2·5.

New Zealand (G. F. Angas). Australia.

97. **M. smaragdinus,** *Chemnitz; M. smaragdinus et opalus, Lamarck,* vii., *p.* 43; *M. canaliculatus et latus, Martyn, nec M. latus, Lamarck.* Oblong, beak obtuse, swollen, smooth, margin even; covered with an olivaceous brown epidermis, under which it is green varied with chestnut brown; margin green; inside purplish white, iridescent, hinge with one or two small teeth. Height, 3; length, 8·75.

A very variable shell; sometimes small specimens are bright green, and sometimes pale yellow.

Common. Found also in China. *M. canaliculatus* is found in the Persian Gulf.

98. **M. dunkeri,** *Reeve.* Oblong oval, dilated and compressed behind, umbones slightly uncinate; covered with a dark olive brown epidermis, below which it is blue; inside bluish white, muscular im-

pressions and a band round the margin blackish blue; three or four small teeth in the left valve and one in the right. Height, 1·6; length, 3.

Common in the South, not so common in the North. Great Barrier Island. Australia.

* 99. **M. latus,** *Lamark, l.c.*, vii., *p.* 41. Shell elongately ovate, concentrically irregularly striated; olive decussated with rays of bright green beneath a thin horny epidermis; posterior side straight, obtusely slanting; anterior arched, scarcely angled.—(*Reeve.*)

100. **M. ater,** *Zelebor, Reise Novara, Moll., pl.* 2, *ff.* 29, 30. Small, oblong, inflated, black, obsoletely concentrically striated; broad and obtuse in front, rounded behind; umbones tumid; dorsal margin much arched, straight behind; lower margin sub-parallel. Blackish blue, covered with a dark brown epidermis; interior purplish, slightly iridescent. Height, ·5; length, 1.

Common.

CRENELLA.

Short and tumid; centre smooth and both ends ornamented with radiating striæ; hinge margin crenulated behind the ligament; interior brilliantly nacreous.

Temperate and Arctic seas.

101. **C. discors,** *Lamark*, vii., *p.* 23; *Modiolacra impacta, Gray, Dieff. N.Z.*, ii., *p.* 259. Oval, sub-diaphanous, the extremities radiately ribbed, and the middle finely longitudinally striated. Brown, with sometimes a mixture of green near the edge, inside highly iridescent. Height, ·85; length, 1·3.

Common. Chatham Islands. Europe. North America.

MODIOLA.

Oblong, inflated in front; umbones anterior, obtuse; hinge toothless; pedal impressions three in each valve, the central elongated; epidermis often produced into long beard-like fringes.

Warm seas.

102. **M. albicosta,** *Lamark, l.c.*, vii., *p.* 19. Smooth, swollen; covered with chestnut brown hairy epidermis, under which it is pinkish; inside yellowish white, getting purplish behind. Height, 1·15; length, 2.

Common. Chatham Islands. Australia.

The Natives call this shell "purewha."

103. **M. securis,** *Lamark, l.c.*, vii., *p.* 22. Smooth, finely concentrically striated; epidermis smooth, brownish black, under which it is purple; inside bluish white, purplish round the margin. Height, ·5; length, 1.

Not so much arched as *Mytilus ater.*

Great Lagoon, Chatham Islands. Australia and Timor.

LITHODOMUS.

Oblong, cylindrical, extremities rounded, covered with a thick epidermis; hinge linear without teeth; ligament marginal, internal; interior nacreous; boring in stones.

Warm and tropical seas.

104. **L. truncatus,** *Gray, Dieff. N.Z.*, ii., *p.* 259. Contracted in the middle, and rather tapering behind; umbones rather prominent, inflexed; dark brown, inside purplish. Height, ·5; length, 1·5.

* 105. **L. gruneri,** *Philippi.* Shell acutely elongated, peculiarly angularly gibbous about the umbones, attenuated anteriorly; dark chestnut, obliquely flexuosely furrowed throughout.—(*Reeve.*)

FAMILY—AVICULIDÆ.

Sub-inequivalve, oblique, resting on the smaller or right valve, and attached by a byssus; interior nacreous; often eared, hinge line straight, cartilage in one or several grooves.

PINNA.

Equivalve, wedge-shaped; umbones quite anterior; posterior end truncated and gaping; ligament groove linear, elongated.

Europe. North America. Panama. Australia. Pacific.

106. **P. zealandica,** *Gray, Dieff. N.Z.*, ii., *p.* 259. Triangular, elongate; brown; inside purplish; valves convex, with rather close obsolete longitudinal ribs, armed with close short semi-cylindrical hollow spines. Height, 4; length, 9·5.

Common; found also in Australia.

ORDER—PECTINACEA.

Lobes of the mantle free through their whole length.

FAMILY—ARCIDÆ.

Hinge of numerous teeth disposed in a straight or curved line; equivalve.

BARBATIA.

Oblong or sub-quadrangular, covered with a rough but perishable epidermis; hinge of numerous teeth, of which the central ones are the smallest; the lateral ones increasing in size and getting more oblique.

107. **B. sinuata,** *Lamark, l.c.*, vi., *p.* 462. Oval-elongate, margin sinuated, smooth or sometimes crenulated in the young, covered with a brown hairy epidermis; surface with fine radiating ribs, decussated by longitudinal striæ. Brown or yellowish; interior white varied with brownish purple. Height, 1·25; length, 2·5.

Common. Stewart's Island. Australia.

108. **B. pusilla,** *Sowerby, Proc. Zool. Soc.*, 1833, *p.* 18. Ovato sub-rhomboidal, white, concentrically ridged and decussated at both ends by radiating striæ, these striæ being absent from a small portion of the anterior central area; anterior end short, rounded; posterior

longer; dorsal margin angled behind; hinge slightly curved. Height, ·35; length, ·7.

Dead shells only.

Australia. Peru.

PECTUNCULUS.

Orbicular, nearly equilateral, smooth or radiately striated; umbones central, divided by a striated ligamental area; hinge semicircular; adductors sub-equal; pallial line simple; margins crenated inside.

Widely spread.

109. **P. laticostatus,** *Quoy, l.c.*, iii., *p.* 466, *et P. ovatus, Quoy, l.c.*, iii., *p.* 467. Orbicular, convex, thick, equilateral, with broad rounded radiating ribs, which become obsolete towards the margin in old individuals; finely concentrically striated; six or eight teeth on each side, with a broad smooth area between them; reddish brown, interior white or brownish; old shells are more or less truncated behind, and the young are often varied with white. Height, 3; length, 3.

Common. Chatham Islands.

Found fossil in Australia, but not recent. The concentric striæ soon wear off, and the shell often becomes quite smooth.

110. **P. striatularis,** *Lamark*, vi., *p.* 493. Orbicular, convex, thick, sub-equilateral, umbones curved slightly forwards; finely radiately striate, and still more finely concentrically striate; teeth, seven to twelve on each side, not divided by a smooth space. Yellowish brown, more or less irregularly marked with reddish; interior varied with brown. Height, 1; length, 1.

Common. Stewart's Island. Australia.

Family—Nuculidæ.

Hinge with a great number of comb-like teeth, interrupted in the middle by the ligamental impression; interior pearly.

NUCULA.

Trigonal, with the umbones turned to the short posterior side; epidermis olive, margins crenulated; hinge with an internal prominent cartilage pit, and a series of sharp teeth on each side.

Widely spread.

111. **N. margaritacea,** *Lamark*, vi., *p.* 506. Obliquely ovate, trigonal, smooth, margin crenulated; hinge angular, with about eight posterior and twenty-two anterior teeth, extending above the cartilage pit. Height, ·37; length, ·37.

Cook Strait. Auckland. Stewart's Island. Europe.

112. **N. strangei,** *Adams.* Oblong, very oblique, smooth, covered with a pale olive epidermis; thin, inflated, margin smooth; hinge with six posterior and ten anterior teeth. Height, ·35; length, ·5.

Wellington Harbour. Australia.

113. **N. consobrina,** *Adams and Angas, Proc. Zool. Soc.*, 1863, *p.* 427. Obliquely ovate, inflated, rather thick, concentrically striated,

margin minutely crenulated; hinge with twelve posterior and sixteen or more anterior teeth. Pale yellowish olive. Height, ·35; length, ·35.

Wellington Harbour. Australia.

LEDA.

Oblong, rounded in front, produced and pointed behind; hinge like *Nucula*, margin even; pallial line with a small sinus.

Widely spread.

114. **L. australis,** *Quoy, l.c.*, iii., *p.* 471. Swollen and rounded in front, produced behind into a long slightly recurved sharp-ended beak; teeth numerous, cartilage pit not projecting. White with a greenish olive epidermis. Height, ·2; length, ·37.

Cook Strait; Stewart's Island.

SOLENELLA.

Oval, gaping and truncated behind, valves concentrically striated and covered with a brownish green epidermis; hinge line straight, with small comb-like teeth.

South America.

115. **S. cumingii,** *A. Adams.* Transversely oblong, rounded in front; produced and waved behind, posterior dorsal margin slightly concave; posterior end truncated, emarginate; ventral margin straight; valves with rather distant (about forty to an inch) concentric, rather elevated striæ. Pale olive green, interior greyish white. Height, ·5; length, 1·1.

Wellington Harbour; Stewart's Island.

The specimen from Stewart's Island has the posterior margin less sinuated.

Family—Pectinidæ.

Free or adhering, eared, ligament internal.

PECTEN.

Oblong or sub-orbicular, regular, equivalve, close; valves generally with scaly rays; ears unequal, the posterior with a sinus for the byssus.

World-wide.

116. **P. zealandiæ,** *Gray, Dieff. N.Z.*, ii., *p.* 260. Sub-orbicular, valves sub-equal, inflated, with about forty radiating sub-equal rough ribs, sometimes ornamented with scales; ears very unequal, margin rather undulated. Variable in colour: yellow, red, purple, or brown. Height, 1·65; breadth, 1·6.

Common. Stewart's Island. Chatham Islands.

117. **P. gemmulatus,** *Reeve.* Ovate, equivalve, with numerous radiating rough ribs, about twelve of which are more prominent than the others and ornamented with foliaceous scales; ears very unequal, the left posterior ear with seven or eight sharp scales on the top;

margin crenulate. Variable in colour, usually brown marbled with purplish and more or less marked with white. Height, 1·35; breadth, 1·15.

* 118. **P. picæ,** *Reeve.* Shell orbicular, compressed, equilateral, nearly equivalve, valves rayed with twenty-one narrow ribs, interstices excavated; white variegated with grey and brown-black; ears large, nearly equal.—(*Reeve.*)

* 119. **P. dieffenbachii,** *Reeve.* Shell sub-triangular, peculiarly impressly plicated on both sides near the umbones, equilateral, nearly equivalve, valves often irregular, profusely radiately lineated and ridged, the lines and ridges everywhere narrowly squamate; reddish brown or violet; ears very unequal.—(*Reeve.*)

Apparently the same as *P. zealandiæ.*

* 120. **P. multicostatus,** *Reeve.* Shell ovate, rather thin, gibbous, equilateral, equivalve; valves rayed by thirty rather distant, narrow, obscurely noduled ribs, finely scaled at the sides; deep vermilion, unspotted, marbled with white at the umbones; ears very unequal.—(*Reeve.*)

Apparently the same as *P. zealandiæ.*

121. **P. radiatus,** *sp. nov.* Orbicular, equivalve, compressed, with about eighty equal rough radiating striæ; ears unequal; thin; margin crenulated. Red, ochraceous, or brownish purple. Height, 1·8; breadth, 1·7.

Stewart's Island, 13 fathoms.

122. **P. (Dentipecten) vellicatus,** *sp. nov.* Irregularly orbicular, sub-equivalve, produced in front, longitudinally irregularly five-plaited, and with small radiating ribs, crossed by fine concentric striæ; ears unequal; hinge line obscurely striated; margin undulating. Reddish, purplish, or white spotted with pink. Height, 1·6; breadth, 1·6.

Common.

VOLA.

Sub-orbicular; inequivalve; superior valve flattened; rayed; ears nearly equal.

123. **V. laticostatus,** *Gray, Dieff. N.Z.*, ii., *p.* 260; *Pecten novæ zealandiæ, Reeve.* Thick, with fourteen to eighteen smooth radiating ribs, the larger ones sometimes depressed, with one or two interrupted longitudinal grooves; flat valve with the ribs distant and narrower. Reddish brown to purplish white; interior white or brownish. Height, 5·5; length, 6.

Common. Chatham Islands.

LIMA.

Equivalve, compressed, obliquely oval; anterior side straight, gaping; posterior rounded, usually close; umbones apart, eared; hinge area triangular, cartilage pit central; adductor impression lateral, large, double; pedal scars two, small.

Widely spread.

124. **L. squamosa,** *Lamark, l.c.*, vii., *p.* 115. Oval, depressed, oblique, with about twenty radiating ribs with distant projecting scales; hinge oblique; margin plicated. White, the ribs sometimes yellowish. Height, 1·75; length, 1·6.

Stewart's Island. Australia. Red Sea (?). America. China. Japan.

125. **L. (Limatula) bullata,** *Born, Lamark, l.c.*, vii., *p.* 118. Oblong, narrow, inflated, sub-equilateral, with fine radiating ridges, smooth on the umbones; ears sub-equal; thin; white. Height, ·7; length, ·4.

Stewart's Island. Tasmania.

FAMILY—ANOMIIDÆ.

Largely indented or with a variously formed opening near the summit of the inferior valve, for the passage of the adductor muscle, which is attached to a plug that adheres to foreign bodies.

ANOMIA.

Shell not eared, upper valve with three sub-central muscular scars; the anterior upper lobe of the notch separated from the cardinal edge; plug entirely shelly, and quite free from the edge of the notch.

Europe. China. Philippines. West Indies. Peru. California. Singapore. Indian Ocean. Australia.

126. **A. stowei,** *sp. nov.* Sub-orbicular, thick, solid, lower valve smooth; yellowish white; interior dark green; notch large, ovate, anterior lobe widely separated from the cardinal edge; muscular impressions two only, strongly marked; upper large, broadly oval or sub-orbicular; lower much smaller on the posterior lower edge of the larger, and confluent with it, sub-orbicular. Diameter, 3·5.

Picton.

127. **A. alectus,** *Gray, Proc. Zool. Soc.*, 1849, *p.* 117. Irregular, thin, upper valve convex, reddish, internally pearly; lower valve yellowish white, interior pearly, with green reflections; upper scar large, sub-orbicular; lower scars two, large, smaller than the upper one, close together but not confluent, about equal in size, and on the same line. Diameter, about 1·5 or 2.

Stewart's Island. Peru.

128. **A. cytæum,** *Gray, Proc. Zool. Soc.*, 1849, *p.* 115. Sub-orbicular, flattish, smooth, slightly plicated obliquely; interior white, pearly; upper scar large, sub-cordate; lower two smaller, the central transversely oval in the notch of the upper one, the lower orbicular close to the lower hinder edge of the central one. Diameter, 2.

Stewart's Island; a single upper valve only. China.

PLACUNANOMIA.

Shell not eared; upper valve with two sub-central muscular scars; the anterior lobe of the upper notch agglutinated to the cardinal edge;

plug shelly at the top and near the body to which it is attached, and with horny longitudinal laminæ below and internally.

Europe. Kamtschatka. California. West Indies. Australia.

129. **P. zealandica,** *Gray, Dieff. N.Z.*, ii., *p.* 260. Sub-orbicular, white, smooth; upper valve with distant radiating grooves; internally dark green; upper valve with two confluent scars; upper oblong, longitudinal, lower rather small and more transverse; thin, translucent. Diameter, 1·75.

Stewart's Island.

130. **P. ione,** *Gray, Proc. Zool. Soc.*, 1849, *p.* 123. White, laminar; edge of the laminæ with small, slender, elongated processes; interior green; lower muscular scar small, round, on the lower hinder edge of the larger one; sinus or perforations large. Diameter, 2·4.

Stewart's Island. Australia. Tasmania.

FAMILY—OSTREIDÆ.

Inequivalve, inequilateral, irregular, close and fixed by the inferior valve, which is the largest, or free; beaks central, straight; adductor impression single, behind the centre.

OSTREA.

Irregular, attached by the left valve; upper valve flat or concave, often plain; lower convex, often plaited or foliaceous, and with a prominent beak; ligamental cavity triangular or elongated; hinge toothless.

Tropical and temperate seas.

131. **O. purpurea,** *Hanley, Conch. Miscel.*, *pt.* 3. Ovato-orbicular, upper valve flat, laminated with imbricating scales; lower rugged, wrinkled; ligament pit small, triangular; muscular impression large, lunate, scarcely hollowed. Purplish, white near the hinge; interior yellowish or greenish white, margin purple, waved. Diameter about 2.

Common. The shore or small mud oyster. Australia.

132. **O. lutaria,** *sp. nov.* Orbicular, upper valve generally concave, smooth, with imbricating laminæ round the margin; lower valve smooth, margin waved, thick; ligament pit triangular, muscular impression very large, lunate, sub-medial, not hollowed. White, interior greenish. Diameter, 4.

Pelorus Sound. Catlin River.

133. **O. virginica,** *Lamark, l.c.*, vii., *p.* 225. Oval or orbicular, irregular; upper valve rather convex; thick; lower rugged, with imbricating plates. Upper valve brownish, lower generally white; interior brownish. Diameter, 2 to 4.

Chatham Islands. North America. Brazil.

134. **O. mordax,** *Gould, Proc. Boston Nat. Hist. Soc.*, iii., *p.* 346. Thick, irregular, lower valve plicated and rugose with spinous processes; upper valve flat, slightly plicated at the margin; ligament pit large

and long; muscular impression moderate, posterior, not hollowed. White, purplish round the margin. Attached to rocks. Diameter about 2 or 3.

The common rock oyster of the North Island.

Class—Brachiopoda.

Body protected by a bivalve shell, applied to the dorsal and ventral surfaces of the animal; dorsal valve smaller, ventral with its umbo produced and perforated; mouth with two long cirriferous arms; animal attached by a peduncle.

Order—Ancylobrachia.

Oral arms attached to two shelly plates arising from the cardinal edge of the ventral valve, recurved and convolute on the inner side of the lamina; shell perforated.

Family—Terebratulidæ.

Shell minutely punctate, usually round or oval; foramen separated from the hinge line by a small triangular plate or deltidium composed of two pieces, teeth two, curved; dorsal valve with a prominent cardinal process between the dental sockets, and a slender shelly loop.

WALDHEIMIA.

Foramen complete; loop elongated and reflected, attached to the hinge plate; median septum of the smaller valve elongated.

1. **W. lenticularis,** *Deshayes, Mag. Zool.*, 1841, *t.* 41. Orbicular, smooth, red; margins even; beak small, recurved; foramen small; deltidium conspicuous; loop elongated, reflected. Length, 2; breadth, 1·83; height, 1·17.

Common.

TEREBRATELLA.

Loop elongated, reflected, attached to the hinge plate, and also to the longitudinal septum by processes given off at right angles from the crura, near the centre of the valve.

2. **T. cruenta,** *Dillwyn; T. sanguinea, Lamark; T. rubra, Sowerby; T. zealandica, Deshayes.* Rounded, ventricose, ornamented with radiating dichotomous ribs; orange-red, deepest at the lines of growth; margins crenulated; dorsal valve with a central, longitudinal depression; beak somewhat produced, lateral ridges distinct; area large, rounded; foramen large, complete; deltidium large; loop elongated, doubly attached. Length, 1·5; breadth, 1·6; height, 1.

Cook Strait.

3. **T. rubicunda,** *Solander; T. inconspicua, Sowerby.* Rounded, trilobed, gibbous, smooth, yellow-red, deeper at the lines of growth;

margins sinuated in front; dorsal valve with a central, longitudinal furrow; beak rather produced, blunt; foramen large, nearly complete; deltidia large, separate; loop elongated, doubly attached. Length, 1; breadth, ·9; height, ·4.

Dusky Bay.

MAGAS.

Shell with a reflected loop attached near the bend to a very prominent central septum.

Santa Cruz. Australia.

* 4. **M. evansii,** *Davidson, Ann. Nat. Hist.*, 1852, *p.* 368. Sub-ovate, with a few unequal bifurcating ribs; pale red; beak tapering, slightly recurved, with well-defined lateral ridges; foramen incomplete; deltidia small; area flattened; dorsal valve rather flat; loop elongated, doubly attached; septum produced, nearly touching the opposite valve. Length, ·33; breadth, ·3; height, ·13.

5. **M. cumingii,** *Davidson, Ann. Nat. Hist.*, 1852, *p.* 368. Oval, thick, smooth, white, slightly tinged with red; beak produced, tapering, slightly curved, grooved to the summit; area triangular, concave; deltidium obsolete; dorsal valve with a prominent muscular fulcrum; loop doubly attached; septum elevated, reaching the ventral valve. Length, 1; breadth, ·7; height, ·4.

Common. Chatham Islands. Australia.

WALTONIA.

Oval, smooth, punctate; valves convex; margins sinuated; beak truncated by a large incomplete foramen; deltidia separate; loop reduced to two simple lamellæ, furnished with oral processes, and attached to a prominent central septum.

New Zealand only. Only one minute specimen is known in the Paris Museum, and in it the loop may possibly have been broken away; if so it should be referred to *Terebratella.*

* 6. **W. valencienni,** *Davidson, Ann. Nat. Hist.*, 1852, *p.* 370. Small, oval, red, smooth, with the margin fimbriated, the plaits radiating in front, diverging at the sides; dorsal valve nearly flat; ventral valve convex; beak prominent; foramen large and incomplete; deltidia disunited. Length, ·2; breadth, ·17; height, ·1.

Probably the same as *Magas evansii.*

KRAUSSIA.

Sub-circular, with a nearly straight hinge line; beak truncated; foramen large and round; deltidia small, disunited; beak laterally keeled; hinge area flat; dorsal valve longitudinally depressed; internal skeleton consisting of a small forked process arising from the septum, near the centre of the valve.

Cape of Good Hope. Australia.

* 7. **K. lamarkiana,** *Davidson, Ann. Nat. Hist.*, 1852, *p.* 370. Sub-orbicular, striated with fine bifurcating ridges, light yellow; hinge

area well defined, flat; foramen large, incomplete; deltidia small; dorsal valve with a central longitudinal groove; apophysis central, bifurcating; margins of the valves thickened internally and spinulose. Length, ·25; breadth, ·25; height, ·12.

Australia.

ORDER—SCLEROBRACHIA.

The oral arms support a shelly band arising from the cardinal edge of the ventral valve; shell not perforate.

FAMILY—RHYNCHONELLIDÆ.

Oral arms elongate, fleshy, supported at the base by two short, hard, diverging shelly laminæ arising from the hinge margin of the ventral valve; unpunctate.

RHYNCHONELLA.

Trigonal, acutely beaked, usually plaited; dorsal valve elevated in front, depressed at the sides; ventral valve flattened, or hollowed along the centre, hinge plates supporting two slender curved lamellæ; dental plates diverging.

Hudson's Bay. Japan.

8. **R. nigricans,** *Sowerby, Thes. Conch.*, i., *p.* 342. Thin, irregular, longitudinally ribbed; margin crenulated. Brown or blackish. Length, ·7; breadth, ·8; height, ·4.

Not uncommon in the South. Chatham Islands.

ORDER—SARCICOBRACHIA.

Oral arms fleshy to the base, without any shelly support; the lower valve without any processes on the hinge margin or disc, except sometimes a slight median longitudinal elevation.

FAMILY—CRANIADÆ.

Upper valve conic; animal attached by the outer surface of the ventral valve.

CRANIA.

Smooth or radiately striated; umbo of dorsal valve sub-central; of ventral valve sub-central, marginal, or prominent and cap-like, with an obscure triangular area traversed by a central line.

Spitzbergen. Europe. India. Australia.

9. **C.,** *sp. ind.* Dorsal valve rugose, with a few radiating lines in places; ventral valve smooth. Light brown. Diameter about ·5.

Class—Polyzoa.

Alimentary canal suspended in a double walled sac, capable of being partially protruded; mouth surrounded by a circle of hollow ciliated tentacles; animals always composite.

ORDER—GYMNOLÆMATA.

Lophophore orbicular, or nearly so; no epistome.

Sub-order—Cheilostomata.

Polypide completely retractile; evagination of tentacular sheath perfect; orifice of cell sub-terminal, of less diameter than the cell, and usually closed with a moveable lip or shutter; sometimes by a contractile sphincter; cells not tubular; consistence calcareous, corneous, or fleshy.

Marine.

FAMILY—CATENICELLIDÆ.

Polyzoarium divided into distinct internodes by flexible joints, internodes formed by a single series of cells.

CATENICELLA.

Cells arising from the upper and back part of the lower one by a short corneous tube, all facing the same way, and forming dichotomously divided branches of an erect phytoid polyzoarium; cell at each bifurcation geminate; each cell with two lateral processes usually supporting an avicularium; ovicells either sub-globose and terminal, or galeriform, and placed below the opening of a cell in front.

Australia. New Guinea. Campbell's Island, South Africa. Mediterranean(?).

(*a.*) *Fenestratæ.*

Cells fenestrate in front; ovicells terminal.

1. **C. ventricosa,** *Busk, Cat. Pol., Brit. Mus., p.* 7. Cells oval, compressed; avicularia wide, sometimes supporting a cup-like cavity, sometimes a closed broad conical spine; fenestræ seven, with fissures radiating towards a rounded central pore; front of cell studded with minute acuminate papillæ; back smooth, sometimes spotted. Dirty white; 3 or 4 inches long.

Lyall's Bay. Bass's Straits, 45 fathoms.

2. **C. hastata,** *Busk, l.c., p.* 7; *C. bicuspis, Gray, Dieff. N.Z.,* ii., *p.* 293. Cells oval; fenestræ seven to nine, disposed in a crescent, with fissures radiating towards the median line; avicularia supporting large, pyramidal, pointed, hollow processes, compressed and perforated before and behind by five or six small circular pores. Yellowish white or reddish; 3 or 4 inches long.

Lyall's Bay. Bass's Straits, 45 fathoms.

* 3. **C. aurita,** *Busk, l.c., p.* 8. Cells oval or sub-globose; avicularia large and strong, two blunt processes, the upper the longer, on each side of the opening in front; fenestræ five, around a central one.

Cook Strait (Lyall). Campbell's Island.

4. **C. cribraria,** *Busk, l.c., p.* 9. Cells sub-globular, compressed, more or less alate; avicularia large, without any superior appendage, and prolonged downwards into elevated lateral alæ; fenestræ numerous, small, round, equidistant, the outside ones larger; a minute central pore.

Lyall's Bay. Bass's Straits, 45 fathoms.

5. **C. margaritacea,** *Busk, l.c., p.* 9. Cells oval or sub-globular, much compressed; avicularia short and broad, supporting a deep cup-like cavity; fenestræ five, large, with fissures radiating upwards; lower margin of aperture notched in the middle; back of the cell minutely sulcate; sulci short, interrupted, irregular.

Lyall's Bay. Swan Island; Australia.

(*b.*) *Vittatæ.*

Cells furnished with a narrow elongated band or "vitta" on each side; without fenestræ; ovicells galeriform, not terminal.

* 6. **C. perforata,** *Busk, l.c., p.* 10. Cells elongated oval; avicularium processes large, perforated at the base, or by several openings; vittæ long, wider below, lateral; surface in front papillose.

New Zealand (Hooker, Lyall, Darwin). Tasmania. Australia.

* 7. **C. ringens,** *Busk, l.c., p.* 10. Cells ovoid or sub-globular; avicularia usually very unequal, the larger one gaping; vittæ anterior, broad; surface in front smooth.

New Zealand (Dieffenbach). South Africa.

* 8. **C. elegans,** *Busk, l.c., p.* 10. Cells elongated ovoid; avicularia large and projecting, without any superior appendage; vittæ narrow, sub-lateral, surface in front papillose.

Port Cooper. Banks' Peninsula. Bass' Straits, 47 fathoms. South Africa. Port Dalrymple.

(*c.*) *Simplices.*

Without vittæ or fenestræ.

9. **C. alata,** *sp. nov.* Cells ovate, narrowed below; lateral processes projecting horizontally and forwards from the whole length of the cell; mouth round, simple, with a thickened rim, placed in the upper part of the cell; surface smooth, with a single median pore (fenestra?), and occasionally another on each side of it.

Lyall's Bay.

FAMILY—CELLULARIIDÆ.

Polyzoarium divided into distinct internodes by flexible joints; internodes formed by two or more cells in a row; cells disposed in the same plane, forming linear branches of a dichotomously divided, phytoid, erect, polyzoarium.

CELLULARIA.

Cells bi-triserial, more than four in each internode; oblong or rhomboidal, contiguous; perforated behind; without avicularia or vibracula.

Europe. Australia. South Africa.

10. **C. cuspidata,** *Busk, l.c., p.* 19. Upper and outer angle produced into a strong spine; a single perforation behind; a cuspidate spine on the summit of the median cell at each bifurcation; ovicell smooth.

Lyall's Bay. Australia.

MENIPEA.

Cells oblong or elongated, attenuated downwards; imperforate behind, sometimes with a sessile avicularium on the upper and outer angle; one or two sessile avicularia on the front of the cell below the aperture.

Arctic seas. South America. South Africa. Britain.

* 11. **M. cirrata,** *Gray, Dieff. N.Z.*, ii., *p.* 292. Cells pyriform, constricted below, six in each internode, one of the lower usually more or less aborted; usually one large lateral avicularium to each internode; three marginal spines very long and strong; anterior avicularium single, its upper border toothed.

New Zealand (Dr. Sinclair). South Africa.

SCRUPOCELLARIA.

Cells rhomboidal, with a sinus on the outer and hinder aspect; each furnished with a sessile avicularium at the upper and outer angle, and with a vibraculum placed in the sinus on the outer and lower part behind; aperture oval or sub-rotund, spinous above, with or without a pedunculate operculum; cells bi-serial and numerous at each internode.

Europe. Australia.

12. **S. scruposa,** *Linnæus.* Cells sub-elongate, narrow; aperture elliptical, with three or four spines above; ovicell smooth.

Lyall's Bay. Europe.

EMMA.

Cells in pairs or triplets; opening more or less oblique, sub-triangular, partially filled up by a granulated calcareous expansion; a sessile avicularium generally on the outer side below the level of the opening.

Bass's Straits.

13. **E. crystallina,** *Gray, Dieff. N.Z.*, ii., *p.* 293. Cells in pairs; one, two, or three spines on the outer edge, the central usually the longest and strongest.

Bass's Straits, 45 fathoms.

Parasitic upon *Polyzoa*, &c.; circinate, branched; branches irregular, divaricate; the opening of the cell triangular, very obliquely placed.

Lyall's Bay.

* 14. **E. tricellata,** *Busk, l.c., p.* 28. Cells in triplets; three or four long spines on the upper and outer part, a small spine on the inner and lower part of the margin of the aperture.

New Zealand (Hooker). Bass's Straits.

Parasitic upon *Catenicella*, &c. Habit long, straggling.

Family—Salicornariidæ.

Polyzoarium divided into internodes by flexible joints; internodes formed by cells disposed around an imaginary axis, forming cylindrical branches of a dichotomously divided erect polyzoarium.

SALICORNARIA.

Front of cell depressed, surrounded by an elevated ridge, by which the surface is divided into more or less regular rhomboidal or hexagonal spaces; no aperture; avicularia disposed irregularly.

Europe. South Africa. Australia. South America.

15. **S. farciminoides,** *Johnston, Hist. Brit. Zooph., p.* 355. Front of cell rhomboidal, or hexagonal with a straight side at top and bottom, sometimes arched above; cells in the same series contiguous; surface granular; avicularium distinct from and above a cell, rostrum immersed, mandible semicircular.

Europe. South Africa. Australia.

16. **S. malvinensis,** *Busk, l.c., p.* 18. Front of cell arched above, very acute below; cells distant in the same series; surface smooth; avicularium replacing a cell, rostrum immersed, mandible wide, large, triangular, pointed.

South America. Falkland Islands.

17. **S.(?) hirsuta,** *sp. nov.* Front of cell rhomboidal, margin raised, surface granular; cells in the same series distant; a long vibraculum at the base of each cell.

Lyall's Bay.

FAMILY—SCRUPARIADÆ.

Polyzoarium continuous throughout; cells uni-serial.

BEANIA.

Polyzoarium confervoid, sub-corneous, or calcareous; cells arising one from another by a slender filiform tube; cell open in front, the edges of the opening furnished with hollow spinous processes arching over the opening; mouth terminal, with a denticle on each side.

Britain. Patagonia.

18. **B. swainsoni,** *sp. nov.* Polyzoarium erect, phytoid, dichotomously branched, sub-corneous; cells sub-continuous, one arising from the top of another; costæ eight to twelve.

From the collection of the late W. Swainson, Esq.

FAMILY—CABEREIDÆ.

Polyzoarium continuous throughout, erect, or flexible, dichotomously divided into ligulate bi-multiserial branches, on the backs of which are vibracula, or avicularia, one common to several cells; avicularia sessile.

CABEREA.

Back of the branches covered with large vibracula, which are placed obliquely in two rows, diverging in an upward direction from the middle line, where the vibracula of either side decussate with those of the other; avicularia, when present, sessile on the front of the cell.

19. **C. boryi,** *Andouin, Busk, l.c., p.* 38. Cells bi-serial; aperture oval; pedunculate operculum expanded principally downwards, and

sometimes sending off a process to the opposite side of the aperture; a single spine on the inner side springing from the peduncle of the operculum; two marginal spines on the outer side of the aperture; ovicell large, arcuate; vibracula ovoid, setæ serrated.

Lyall's Bay. England. South Africa. South America. Cumberland Island.

20. **C. lata,** *Busk, l.c., p.* 39. Bi-multiserial; marginal cells with a single sub-apical spine; central cells without marginal spines; setæ serrated.

Australia.

Perhaps a variety of *C. hookeri, Johnston, Brit. Zooph.*, p. 338. (Busk.)

FAMILY—BICELLARIIDÆ.

Polyzoarium continuous, erect, dichotomously divided into narrow ligulate, bi- or multiserial branches; no vibracula; avicularia, when present, pedunculate and articulated.

BICELLARIA.

Cells turbinate, distant; aperture directed more or less upwards; several spines, marginal or dorsal.

Europe. Australia.

21. **B. tuba,** *Busk, l.c., p.* 42. Aperture round, looking almost directly upwards; a digitiform hollow process below the outer border, supporting two to four long incurved spines; two or three other long curved sub-marginal spines behind or above the aperture, none below it in front; a solitary spine on the back, a short way down the cell; avicularia very long, trumpet-shaped, arising from the back of the cell.

Lyall's Bay. Bass's Strait, 45 fathoms.

HALOPHILA.

Cells continuous, attenuated downwards, much expanded upwards, with a large plain aperture; unarmed.

Bass's Straits.

22. **H. johnstoniæ,** *Gray, l.c.*, ii., *p.* 292. Cells obliquely truncated above, with a short spine on the outer angle; aperture large oval; margin slightly thickened. Pale gray.

Lyall's Bay. Bass's Straits.

BUGULA.

Cells elliptical (viewed behind), closely contiguous, bi-multiserial; aperture very large; margin simple, not thickened; avicularia, when present, pedunculate and articulated.

Europe. Rio de Janeiro. Honduras. Red Sea. Australia. Auckland Islands. South Africa.

23. **B. neritina,** *Linnæus; Busk, l.c., p.* 44. Cells quadrangular, lengthened, with a truncated summit, the angles projecting.

Lyall's Bay. Australia. Auckland Islands. Red Sea. Rio de Janeiro.

* 24. **B. dentata,** *Lamouroux, Busk, l.c., p.* 46. Cells bi-serial, oblong, rounded at each end; aperture oval; three marginal spines on the outer side, and one on the inner; avicularia lateral, capitate; ovicell superior, cucullate, blue. Gray or blue.—(*Busk.*)

New Zealand (Hooker, Lyall). Australia. Tasmania. South Africa.

* 25. **B. prismatica,** *Gray, l.c.*, ii., *p.* 292. Polyzoarium reddish brown with prismatic reflections; cells two-rowed, elongate; ovicell globular, polished white.—(*Gray.*)

New Zealand (Dr. Sinclair).

MUSCARIA, *gen. nov.*

Cells multiserial, arranged back to back on both sides of the branches.

26. **M. armata,** *sp. nov.* Branches robust, flattened; cells oval, convex, arranged in longitudinal rows which are divided by elevated ridges; cells in the same series contiguous; a long curved smooth spine by the side of every alternate cell; aperture small, transverse, oval, the lower lip prominent. Avicularia ——(?).

Polyzoarium about an inch in height, brown. When viewed by transmitted light, pale brown, with the lips of the aperture dark brown.

Motanau. On the roots of *Boltenia pedunculata.*

Family—Flustridæ.

Polyzoarium flexible, expanded, foliaceous, erect, sometimes decumbent and loosely attached; cells multiserial, quincuncial or irregular.

FLUSTRA.

Cells contiguous, on both sides of the frond.

Europe. Australia. Society Islands.

27. **F. papyracea,** *Ellis; Busk, l.c., p.* 48. Cells oblong, slightly enlarged upwards, a short marginal spine at each upper angle; avicularia fusiform, situated on the right or left marginal spine. Olivaceous, in places pinkish.

Lyall's Bay. Britain.

CARBASEA.

Cells continuous, on one side only of the frond.

Britain. South Africa. Australia. South America.

28. **C. pisciformis,** *Busk, l.c., p.* 50. Cells (viewed behind) elongated, truncated at both ends, contracted at the waist; in front pyriform, much expanded in the middle, contracted at the top and tapering downwards, slightly expanding again at the end; aperture large, occupying most of the front of the cell; ovicells immersed, marked with radiating lines.

New Zealand. Cook Strait. Tasmania. Australia.

29. **C. episcopalis,** *Busk, l.c., p.* 52. Cells pyriform, cylindrical or barrel shaped; back marked with transverse rugæ; aperture circular, superior; ovicells lofty, keeled; avicularia none. Pale stone colour.

Lyall's Bay. Bass's Straits, 45 fathoms.

* 30. **C. indivisa,** *Busk, l.c., p.* 53. Frond semicircular, undivided, sub-plicated; cells oblong, surface behind granulated; ovicells ——(?), avicularia none.—(*Busk.*)

New Zealand (Hooker).

31. **C. cyathiformis,** *Macgillivray, Trans. Phil. Inst., Victoria,* 1859, *p.* 97. Polyzoarium infundibuliform, with the cells on the inner surface, white, translucent; cells pyriform or oval, smooth, arranged in radiating series; avicularia none; aperture lunate, not extending across the front of the cell.

Lyall's Bay; on *Catenicella.* Australia.

DIACHORIS.

Cells disjunct, each connected with six others by tubular processes; frond sometimes partially adnate and decumbent.

Australia. South America.

* 32. **D. magellanica,** *Busk, l.c., p.* 54. Cells semi-erect, open in front, oval; mouth circular, with a thickened and raised margin; a pedunculate and articulated capitate avicularium attached to the margin of the cell near the top on each side; ovicell ——(?).—(*Busk.*)

New Zealand (Lyall). Straits of Magellan.

Frondose, with cells on both sides, also loosely adnate.

* 33. **D. inermis,** *Busk, l.c., p.* 54. Cells decumbent, boat-shaped, entirely open; two short marginal spines on each side near the top; ovicell ——(?), avicularia ——(?).—(*Busk.*)

New Zealand (Lyall). Straits of Magellan.

34. **D. buskiana,** *sp. nov.* Cells semi-erect, membranous, oval, open in front; mouth circular, with a projecting lower lip, and often a small nodule in the centre; nodule and lower lip granulated, the rest finely transversely striated; connecting tubular processes short, about eleven to each cell.

Lyall's Bay.

Encrusting seaweeds, loosely attached.

Family—Farciminariidæ.

Polyzoarium continuous, erect, dichotomously branched; branches cylindrical, the cells disposed round an imaginary axis.

FARCIMINARIA.

Corneous, flexible; margin of cell much raised; aperture occupying the whole front of the cell; ovicell cucullate.

Tasmania. South Africa.

* 35. **F. aculeata,** *Busk, l.c., p.* 33. Sides of the cells within the margin beset with furcate spines; ovicell cucullate, external; surface aculeate.—(*Busk.*)

New Zealand (Lyall). Tasmania.

* 36. **F. blainvillii,** *Lamouroux; Gray, l.c.*, ii., *p.* 293. Subquadrangular, formed of four series of ovate convex cells, with an oblong margined mouth, and scattered with flexible root-like fibres.—(*Gray.*)

New Zealand (Dr. Sinclair).

FAMILY—GEMELLARIIDÆ.

Polyzoarium continuous, dichotomously branched; branches with cells in opposite pairs.

DIMETOPIA.

Cells joined back to back; aperture oblique; each pair facing at right angles to those above and below; at a bifurcation, the pair being disjoined, each of the disjoined cells gives off a secondary pair.

Australia.

37. **D. spicata,** *Busk, l.c., p.* 35. Cells infundibuliform; margin thickened, with numerous equidistant, elongated, acute spines. White and transparent, forming thick tufts about 1½ to 3 inches or more in height.

Lyall's Bay. Bass's Straits, 45 fathoms.

38. **D. cornuta,** *Busk, l.c., p.* 35. Cells contracted below the middle; aperture oblique, wide above; a strong conical process on each side above; one or two long projecting spines in front, inserted below the margin. Branches narrower than the former; yellowish; tufts loose.

Lyall's Bay. Bass's Straits, 45 fathoms.

FAMILY—MEMBRANIPORIDÆ.

Polyzoarium membrano-calcareous, or calcareous, expanded, encrusting, sometimes foliaceous, contorted and sub-erect; cells horizontal, quincuncial or serial.

MEMBRANIPORA.

Cells more or less irregularly disposed, or quincuncial, with raised margins, a greater or less extent of the front membranaceous and flexible.

Europe. Greenland. Australia. South America. South Africa.

39. **M. membranacea,** *Linnæus, Busk, l.c., p.* 56. Cells oblong, with a short blunt spine at each upper angle.

Lyall's Bay; on *Fucis*, &c. Europe. Australia.

40. **M. pilosa,** *Linnæus; Gray, Dieff. N.Z.*, ii., *p.* 292; *Johnston, Brit. Zooph., p.* 280. Cell prolonged below; a moveable spine or vibraculum below the lower margin of the aperture, sometimes aborted; an irregular number of marginal spines; wall of cell cribriform.

Lyall's Bay. Europe. Australia.

41. **M. lineata,** *Linnæus; Busk, l.c., p.* 58; *Johnston, l.c., p.* 349. Cells oval, separate, the margin armed with numerous slender spines, erect or bent inward.

Europe. Greenland.

42. **M. tessellata,** *sp. nov.* Cells oval, arrangement quincunc, front rounded above with the sides and bottom flat, margin rough with short projecting denticulations; interspaces granular; ovicells rather flat, granular.

Common; incrusting dead shells, &c.

43. **M. brunnea,** *sp. nov.* Cells broadly oval, with a single spine at the centre of each side projecting over the front; ovicells flattened with a median ridge; a cup-shaped avicularium on each side just below it. Brown.

On *Turritella rosea.*

44. **M. cyclops,** *Busk, l.c., p.* 61. Front of cells oval; margin very much raised, beaded; a single avicularium below the aperture.

45. **M. magnilabris,** *Busk, l.c., p.* 62. Front of cell oval; upper margin semicircular, much raised; moveable lip very large, occupying the entire semicircular upper third of the front of the cell, remainder of the front of cell depressed, membranous or semi-calcareous, punctured.

South Africa. Atlantic.

LEPRALIA.

Polyzoarium adnate, crustaceous, spreading from a centre in a more or less circular form; composed of contiguous or connected, calcareous, decumbent cells, the walls of which are complete in front.

Widely distributed.

1. *With Avicularia.*

46. **L. reticulata,** *Macgillivray; Busk, l.c., p.* 66; *Johnston, l.c., p.* 317. Cells ovato-ventricose; interspaces punctured; mouth raised, with a thin margin and a channelled sinus in the lower lip, two to three spines on the upper margin; a central avicularium immediately below the mouth; mandible acute; ovicell globular, punctured, its opening bounded below by the meeting of its sides above the avicularium.

Britain.

47. **L. angela,** *sp. nov.* Cells ovate, immersed, with radiating grooves; mouth sub-orbicular, the lower lip prolonged into a deep spout-like projecting sinus; a spoon-shaped avicularium on each side just below the mouth, directed horizontally outwards; ovicell large, globose, granular.

2. *With Vibracula.*

48. **L. ciliata,** *Linnæus; Busk, l.c., p.* 75; *Johnston, l.c., p.* 279. Cells ovate or sub-globose, surface granular, an elongated acuminate vibraculum on one side of the body; a semilunar pore, frequently on an eminence, in the middle of the front of the cell above the centre;

mouth with from five to seven spines; lower lip straight, entire; ovicell globose, surface granular.

Britain. Mediterranean. America. Australia.

* 49. **L. lyallii,** *Busk, l.c., p.* 75. Cells oval, walls thin, verrucose, or rugose; mouth raised, margin thickened, with a spout-like sinus in front, and five to six spines on the sides and above; a small vibraculum on many of the cells, on one side near the top.—(*Busk.*)

New Zealand (Lyall). On *Fuci.*

3. *Without Avicularia or Vibracula.*

A. WITH ORAL SPINES.

50. **L. variolosa,** *Busk, l.c., p.* 75; *Johnston, l.c., p.* 317. Cells oval, immersed or sub-immersed, usually disposed in linear series; punctured or areolated round the margin, granular (sometimes punctured) in front; mouth rounded or sub-quadrangular, with two to four close set spines quite at the summit; lower lip with a projecting mucro and an internal bifid denticle; ovicells deeply immersed, also areolated round the margin.

Lyall's Bay. Britain.

51. **L. nitida,** *Busk, l.c., p.* 76; *Johnston, l.c., p.* 319. Cells ovate, raised in front; wall composed of four to nine ribs on each side, the spaces between which are filled up by a diaphanous membrane; mouth with four to six oral spines; ovicell sub-globose, surface granular.

Britain.

52. **L. ventricosa,** *Hassall; Busk, l.c., p.* 78; *Johnston, l.c., p.* 305. Cells distinct above, or raised, immersed at the base, ventricose, ovate or sub-globose; mouth sub-orbicular, with a thickened raised margin; a bifid denticle on the lower lip, and four (rarely more) marginal spines; surface granular or irregularly striated; usually a pointed or broad mucro in front of the mouth; ovicells globular, prominent.

Lyall's Bay. Britain.

53. **L. urceolata,** *sp. nov.* Cells large (·04 inch), ovate, ventricose, immersed behind; surface finely granular without any pores; mouth simple, scarcely thickened, sub-orbicular, lower lip straight; from four to seven spines on the upper margin.

On dead shells.

54. **L. cancer,** *sp. nov.* Cells ovate, sub-immersed, separated by depressed lines; surface coarsely granular; lower lip produced into a mucronate hollowed process, which covers the mouth, and is transversely striated; a short blunt incurved spine on each side of the mouth; in the fertile cells the lower lip is not mucronate but rounded, and the spines are absent; ovicells globose, coarsely granular.

Lyall's Bay. On *Fuci.*

55. **L. pellucida,** *sp. nov.* Cells ovato-ventricose, smooth, thin, translucent, a pore in the centre; mouth nearly terminal, oblong, transverse, with four or five long spines on its upper margin; ovicell ——(?). On *Fuci.*

B. MOUTH WITHOUT SPINES.

56. **L. pertusa,** *Busk, l.c., p.* 80; *Johnston, l.c., p.* 311. Cells ovato-ventricose, or rhomboid, immersed, separated by a raised line, punctured; mouth orbicular, or narrowed below, and with a small tooth on each side; margin scarcely thickened, unarmed; usually with an irregular perforated tubercle below the mouth; ovicell globose, punctured. Purple.

Britain. Australia(?).

On dead shells and corals.

57. **L. areolata,** *Busk, l.c., p.* 82. Cells sub-ovate or diamond-shaped, depressed, quite immersed, quincuncial, outlines marked by raised lines; surface granular; mouth sub-orbicular, with a sinus below and a raised thickened margin.

Straits of Magellan, 10 to 20 fathoms.

58. **L. malusii,** *Busk, l.c., p.* 83; *L. biforis, Johnston, l.c., p.* 314. Cells ovate, frequently truncate at each end; front, especially round the margin, punctured with numerous stelliform pores; a central lunate pore; mouth rounded above, straight below, sometimes armed with three to four oral spines, sometimes forked; ovicell smooth, sometimes porcellanous, grooved round the upper border, adnate to the front of the cell above.

Britain. South America. Falkland Islands.

59. **L. hyalina,** *Busk, l.c., p.* 84; *Johnston, l.c., p.* 301. Cells sub-cylindrical, elongated or compressed and raised in front, sub-erect, the wall thin, transparent, and smooth; mouth circular, frequently with a contracted often sub-tubular sinus below, the upper or posterior margin much raised, sharp; ovicell globular, erect, free, punctured.

Britain. California. Greenland. Cape of Good Hope. Falkland Islands, but not New Zealand.

Var. D., var. nov.—A sinus on the lower lip, and one or two low tubercles in the centre of the cell below one another.

Lyall's Bay.

60. **L. grandis,** *sp. nov.* Cells large (·04 inch), ovate, ventricose; surface shining, sub-granular, often with one or two longitudinal wrinkles, and with distant pores; mouth simple, slightly thickened, sub-orbicular, with the lower lip flattened; ovicell——(?). Pale brown.

Common on dead shells.

61. **L. vellicata,** *sp. nov.* Cells immersed, areolate; mouth higher than broad, rounded at the top and contracted in the middle, the lower lip arched slightly upwards, and raised; ovicell globose, areolate.

FAMILY—CELLEPORIDÆ.

Polyzoarium composed of cells more or less vertical to its axis or plane, heaped together, or irregularly overlying each other.

CELLEPORA.

Polyzoarium calcareous, rigid, adnate, or erect; composed of urceolate, sub-erect, contiguous cells heaped together irregularly, or

arranged quincuncially; an ascending rostrum on one or both sides of the mouth, furnished with an avicularium.

Europe. California. Patagonia. Australia.

62. **C. pumicosa,** *Linnæus; Busk, l.c., p.* 86; *Johnston, p.* 295. Glomerous, cells heaped, ovate or pyriform; mouth orbicular; rostrum large, pointed; avicularium on the internal aspect, oval; ovicell small, decumbent.

Lyall's Bay. Britain. California. Bass's Straits.

Forming small white balls on *Sertularia*, &c.

63. **C. bispinata,** *Busk, l.c., p.* 87. Cells ovate, elongated, surface granular; mouth orbicular; rostrum anterior, with a very minute avicularium on one side; two long oral spines on the opposite margin. Brown.

Tasmania.

64. **C. mamillata,** *Busk, l.c., p.* 87. Cells ovate, ventricose, immersed, forming an incrusting polyzoarium, the surface of which is studded with mamillary projections; mouth orbicular; rostrum large, conical, with a large avicularium on the internal face, sometimes a conical spine on the opposite side of the mouth.

Patagonia.

65. **C. ampliata,** *sp. nov.* Massive, free; cells agglomerated, vertical, smooth, ovate, with a row of large punctures round the margin; mouth ovate or sub-orbicular, thin.

Lyall's Bay.

66. **C. agglutinans,** *sp. nov.* Massive, free, enclosing serpulæ, &c.; cells agglomerated, vertical, finely granulated, ovate; mouth sub-orbicular, lower lip flattened, sometimes produced into a short incurved spout.

Lyall's Bay.

FAMILY—ESCHARIDÆ.

Polyzoarium erect, rigid, foliaceous and expanded, lobate or reticulated; cells disposed quincuncially in the same plane on one or both sides of the polyzoarium.

ESCHARA.

Polyzoarium foliaceous and expanded, or branched and sub-linear; cells on both surfaces back to back, immersed, coalescent, horizontal to the plane of the axis.

Europe. South Africa. Australia. Patagonia.

(*a.*) *More or less Expanded, Foliaceous.*

67. **E. unicornis,** *sp. nov.* Polyzoarium expanded; cells short with a few large pores on the surface; interstices finely granulated; mouth sub-orbicular, flattened below, lower lip produced into a rather incurved spout; a single spine on the right or left side of the mouth.

68. **E. flexuosa,** *sp. nov.* Foliaceous, infundibuliform, much waved, springing from a broad base; cells elongated, granular, separated by one or two rows of pores; mouth transverse, oval; a large spoon-shaped avicularium in the centre, below the lower lip.

(b.) Divided into Branching Lobes.

69. **E. platalea,** *Busk, l.c., p.* 90. Cells ovate, acute inferiorly, with a depressed area below the mouth in front, at the bottom of which is a simple pore; avicularia irregularly scattered over the polyzoarium, rare, with a spoon-shaped mandible.

Australia.

70. **E. lichenoides,** *Milne-Edwards; Busk, l.c., p.* 90. Cells ovate, punctured in the centre by three to four stellate pores, which soon coalesce into a single apparent opening; mouth sub-orbicular; a small prominent avicularium on each side immediately below the mouth, looking outwards.

Australia.

RETEPORA.

Polyzoarium foliaceous, reticulate, infundibuliform or contorted, sub-pedunculate; cells decumbent, opening on the upper surface only.

Europe. Cape Horn. Australia.

71. **R. cellulosa,** *Busk, l.c., p.* 93; *R. reticulata, Johnston, l.c., p.* 353. Polyzoarium turbinate or crateriform, undulated, curled: cells sub-cylindrical, surface smooth; mouth sub-orbicular, lower lip projecting, with an avicularium on one side; surface strongly vibicate; a papilliform avicularium at the lower angle of the fenestræ. White.

Chatham Islands. Europe. Cape Horn. Australia.

HEMESCHARA.

Polyzoarium foliaceous, contorted, or laminar, composed of a single layer of cells disposed quincuncially, and opening on one surface only.

Marion Islands.

72. **H. fairchildi,** *sp. nov.* Cells ovate, immersed, granular, punctured round the edge; mouth simple, lower lip straight or with a sinus; occasionally with an avicularium on one side of the mouth; ovicell globose, granular. White.

Cook Strait.

Forming an easily detached crust on dead shells.

Sub-order—Cyclostomata.

Cells tubular; orifice terminal, of the same diameter as the cell, without any moveable apparatus for its closure; consistence calcareous.

Family—Crisiidæ.

Polyzoarium divided into distinct internodes, usually connected by flexible joints; attached by horny tubes.

CRISIA.

Cells in two rows, sub-alternate; aperture entire.

All parts of the world.

73. **C. eburnea,** *Linnæus; Johnston, l.c., p.* 283. Cells loosely aggregated, cylindrical, bent, with scattered pores; orifice free; ovicell pear-shaped, dotted.

Europe, California.

74. **C. aculeata,** *Hassall; Johnston, l.c., p.* 285. Cells cylindrical, bent, with scattered pores, and with a long spine on the outer side; orifice free; ovicell pear-shaped, dotted.

Lyall's Bay. Europe.

Parasitic on seaweed.

MARGARETTA.

Cells disposed in four rows, back to back, each pair facing at right angles to those above and below; furnished with long bristles.

Cape of Good Hope.

75. **M. barbata,** *Lamark, Anim. sans vert.*, ii., *p.* 178; *M. cereoides, Gray, Dieff. N.Z.*, ii., *p.* 293, *nec Cellaria cereoides, Ellis.* Cells immersed, the mouth only projecting, surface granulated; mouth not thickened; a long bristle on each side of the mouth. White or pale brown. In time the bristles fall off, but their position can always be recognized by a cup-shaped depression.

Lyall's Bay. Cape of Good Hope.

FAMILY—IDMONEIDÆ.

Polyzoarium erect, simple or branched; branches continuous, cylindrical or sub-compressed, free or anastomosing.

HORNERA.

Polyzoarium ramose; branches dichotomous and free, or united by short transverse ramules, so as to constitute a retiform expansion; cells opening on one side only of the branches, which surface is marked with wavy anastomosing ridges, in the more or less rhomboidal interstices of which the openings of the cells are situated.

Europe. Kamtschatka. India. Patagonia. Australia.

76. **H. gouldiana,** *Busk, Crag Polyzoa, p.* 95. Foliaceous, infundibuliform, waved, reticulated; mouths of the cells sub-orbicular, with a slightly raised and thickened margin; interspaces coarsely granulated; back finely granulated and lightly striated; fenestræ small; branches cylindrical. White.

Chatham Islands only. Australia(?).

I refer this species to *H. gouldiana*, Busk, in order to prevent an unnecessary multiplication of names, but I have seen no sufficient description of that species.

77. **H. squamosa,** *sp. nov.* Foliaceous, waved, infundibuliform, reticulated; mouths of the cells sub-orbicular, with a raised and scarcely thickened margin; interspaces finely granulated and with slightly raised, scaly, longitudinal lines; back finely granulated, with slightly raised, rather scaly lines; fenestræ small; branches compressed. White or pale brown.

Chatham Islands only.

The cells are more distant than in the last.

78. **H. striata,** *Milne-Edwards; Stoliczka, Voy. Novara, Palæ., p.* 107. Polyzoarium cespitose; branches cylindrical, not reticulated; mouths of cells disposed more or less regularly in longitudinal series,

small, orbicular, those towards the lower part of the branches with a raised, slightly thickened, annular border, which is sometimes produced into an acute angle on one side; a pore above and below the mouth; anterior surface marked with smooth reticulated ridges, forming nearly regular diamond-shaped areolæ; posterior surface sulcate, the sulci usually diverging obliquely from an imaginary median line, and finely punctate; surface between the sulci smooth or sub-granular.

IDMONEA.

Polyzoarium ramose, branches dichotomous or irregularly divided; free or anastomosing; mouths of cells disposed in parallel, transverse or oblique, usually alternate, rows on each side of the front of the branches, which are angular or carinate in the middle.

79. **I. giebeliana,** *Stoliczka, Voy. Novara, Palæ., p.* 115. Dichotomous, branches depressed, anastomosing; cells irregular, sometimes single, sometimes in series of three or four, and sometimes in clusters of four to eight; mouth round, raised; both surfaces minutely punctate; branches elliptical.

PUSTULIPORA.

Polyzoarium ramose, branches cylindrical, clavate or terete; composed of tubular cells, which open on all sides of the branch.

80. **P. delicatula,** *Busk, Crag Polyzoa, p.* 108. Dichotomously branched, occasionally anastomosing; branches crowded, erect, tapering to fine points, fragile; composed of loosely aggregated undulating cells which are distinctly ringed.

Australia(?).

I refer this species to *P. delicatula*, Busk, in order to prevent an unnecessary multiplication of names, but I have seen no sufficient description of that species.

81. **P. haastiana,** *Stoliczka, Voy. Novara, Palæ., p.* 102. Branches erect, close, anastomosing, in thick masses with the ends truncated to the same spherical surface; sub-cylindrical; cells distant, marked with longitudinal lines; mouth slightly prominent, recurved, sub-orbicular, margin thickened. White.

Common.

82. **P. proboscidæ,** *Milne-Edwards.* Irregularly branched; branches spreading, slender; cells numerous, granular; mouths projecting, recurved, slightly contracted. Purplish.

83. **P. porcellanica,** *sp. nov.* Branches slender, spreading, smooth; cells rather distant, wholly immersed, orifice sub-orbicular, neither raised nor margined; branches cylindrical, sometimes anastomosing.

Lyall's Bay.

CINCTIPORA, *gen. nov.*

Polyzoarium erect, ramose; branches dichotomous or irregularly divided, free, cylindrical; cells immersed; mouths attached to the stem and to one another, forming circles round it; cell walls thin, punctured internally.

84. **C. elegans,** *sp. nov.* Cells arranged quincuncially, minutely granular, the septum between two cells prolonged upwards into a narrow rib running up the centre of the tube in the row above. White.

FAMILY—TUBULIPORIDÆ.

Polyzoarium depressed, or massive, adnate, orbiculated, or lobed.

TUBULIPORA.

Polyzoarium adnate or decumbent; entire or divided into lobes or branches; cells partially free and ascending, radiating from an eccentric point.

85. **T. glomerata,** *sp. nov.* Encrusting, irregular, wart-shaped, thick; tubes crowded, irregularly placed.

ALECTO.

Polyzoarium adnate, creeping, irregularly branched; cells in single series or disposed in more or less irregular transverse rows.

86. **A. racemosa,** *sp. nov.* Large, branched; cells in clusters of from two to ten together, irregularly placed.

87. **A. disposita,** *sp. nov.* Slightly branched, irregular; cells prominent, arranged in parallel rows; margin defined.

FAMILY—DIASTOPORIDÆ.

Polyzoarium discoid or indefinite, adnate, sessile, or pedunculate.

TENNYSONIA.

Polyzoarium arising from a rather thick central base, lobate, stelliform; lobes curved, with a median angle; tubes wholly immersed, except the mouths, which are disposed in straight lines extending from the median angle to the denticulate margin of the lobes; interspaces cancellous.

South Africa.

88. **T. stellata,** *Busk.* Fronds much curled; tubes with thin mouths, slender, erect, rather closer towards the margin, but ceasing altogether before reaching it.

Cape of Good Hope.

PATINELLA.

Disc concave or depressed in the centre; tubes ascending towards the margin; mouth simple, circular; surface not perforated.

* 89. **P. verrucaria,** *Milne-Edwards; Tubulipora patellata, Gray, Dieff. N.Z.*, ii., *p.* 295. Cells crowded towards the circumference; margin scored; central cells shorter, often oblique.

New Zealand (Dr. Sinclair).

DISCOPORELLA.

Polyzoarium sessile or adnate; discoid, centre usually elevated or sub-conical, rarely depressed; tubes horizontal, usually disposed in

radiating lines, or irregularly; mouth toothed or emarginate; intertubular surface cancellous.

90. **D. hispida,** *Johnston, l.c., p.* 268. Polyzoarium adnate; cells in radiating lines with two to four long teeth round the mouth.

ORDER—PHYLACTOLÆMATA.

Lophophore bi-lateral; mouth with an epistome.

Sub-Order Lophophea.

Arms of lophophore free or obsolete. (Fresh water.)

FAMILY—PLUMATELLIDÆ.

Polyzoarium rooted.

PLUMATELLA.

Polyzoarium confervoid, branched, composed of a series of membrano-corneous tubular cells, each of which constitutes a short ramulus with a terminal orifice; branches distinct from one another. Lophophore crescentic, with two long arms.

Europe. North America. Australia.

91. **P. aplinii,** *Macgillivray, Trans. Royal Soc. Vic.,* 1860, *p.* 204. Polyzoarium adherent, creeping; cells cylindrical, with a distinct keel; aperture oblique.

Homebush Creek, Malvern Hills, under stones. Australia.

I have only examined dried specimens, but Macgillivray says that the tentacula are about sixty, and the statoblasts elongated. It approaches very near to *P. emarginata* of Europe.

Class—Tunicata.

Alimentary canal suspended in a double walled sac, not capable of protrusion, mouth opening into the bottom of a respiratory sac; animal simple or composite; an imperfect heart in the form of a tube open at both ends.

Marine.

FAMILY—ASCIDIIDÆ.

Animal simple, fixed; solitary or gregarious; oviparous; branchial sac simple or disposed in (eight to eighteen) deep and regular folds.

ASCIDIUM.

Sessile, covered with a coriaceous or gelatinous tunic; branchial orifice 8-lobed, furnished inside with a circle of simple tentacular filaments; anal 6-lobed; branchial sac not plaited, its meshes papillated.

Greenland. Europe. North America.

1. **A. erythrostoma,** *Quoy, l.c.,* iii., *p.* 609. Transverse,

globose, coriaceous, rugose; dirty yellowish or greenish; apertures tubular, distant; with four broad rosy white stripes.

Common.

* 2. **A. janthinoctoma,** *Quoy, l.c.*, iii., *p.* 610. Upright, white; apertures distant, marked with four violet lines; oral branchiæ long, erect.

River Thames (Quoy).

* 3. **A. cærulea,** *Quoy, l.c.*, iii., *p.* 611. Globose, white below; apertures blue, distant, with two violet lines; anal branchiæ longer.

Bay of Islands (Quoy).

BOLTENIA.

Globular, pedunculated; test coriaceous; orifices lateral, 4-cleft; branchial sac longitudinally plaited; tentacles compound.

Greenland and New Zealand.

4. **B. pedunculata,** *Milne-Edwards.* Body with six longitudinal folds, more or less tuberculated, especially in young individuals; peduncle wrinkled, occasionally branched. Whitish, more or less tinged with pink.

Coasts of the South Island.

Botryllidæ.

Animals compound, fixed, their tests fused, forming a common mass in which they are imbedded in one or more groups; individual not connected by any internal union; oviparous and gemmiparous.

BOTRYLLUS.

Test gelatinous or cartilaginous, incrusting; systems numerous, prominent, round or star-shaped, with central cavities; individuals six to twenty in each system, lying horizontally, with the vent far from the simple branchial orifice.

Europe. North America.

* 5. **B. racemosus,** *Quoy, l.c.*, iii., *p.* 620. Ovate, pedunculated, fleshy, red, many branches together; animal radiate.

River Thames (Quoy).

Family—Pyrosomidæ.

Animal compound, free, pelagic.

PYROSOMA.

Cartilaginous, non-retractile, cylindrical, hollow, open at one end only; exterior covered by numerous pointed zooids, grouped in whorls; interior mamillated and pierced by the exhalent orifices of the tunicaries.

All warm seas.

6. **P. atlantica,** *Lamark, l.c.*, iii., *p.* 510. Cylindrical, narrowed towards the closed end; both ends rounded; rather thick; zooids crowded, short. Brownish yellow. Length, 5; breadth, 1·75.

7. **P. elegans,** *Lamark, l.c.*, iii., *p.* 510. Cylindrical, rounded at

the closed end, broad and truncated at the open end; thin, translucent; zooids distant, long. Pale yellowish. Length, 4·5; breadth, 1·75.

FAMILY—SALPIDÆ.

Animal free, oceanic; alternately solitary and aggregated.

SALPA.

Oblong, sub-cylindrical, truncated in front by the oral orifice, pointed posteriorly; anal orifice sub-terminal; test thin, transparent; muscular mantle incomplete, forming a set of transverse or oblique bands; gill rudimentary, forming an oblique band across the interior; visceral nucleus posterior.

North Sea. Europe. Australia.

8. **S. costata,** *Quoy, l.c.*, iii., *p.* 570. Large, rounded in front, bicaudate behind; below canaliculate, gibbous, slightly spinose, spotted with greenish white; muscular bands in four distinct series; mouth terminal.

Seas of New Zealand (Quoy).

* 9. **S. infundibuliformis,** *Quoy, l.c.*, iii., *p.* 587. Anterior end thick, cartilaginous; posterior gibbous below; mouth terminal; posterior girt with tubular muscular bands.

Pacific Ocean, between New Zealand and the Friendly Islands (Quoy).

10. **S. mucronata,** *Lamark, l.c.*, iii., *p.* 516. Ovato-cylindrical, truncated at each end; mouth lateral; muscular bands five, with their dorsal ends separate; smooth; constricted below the mouth; nucleus large, globular. Length, 1·2; breadth, ·3.

DOLIOLUM.

Transparent, cask-shaped; open at both ends; small (·16 to ·83 in length); oral extremity a little prominent, with about twelve rounded denticulations; posterior end fringed; muscular bands six, equidistant, besides the sphincters of the orifices; branchiæ consisting of two bands stretched across the interior, one above and one below, connected by transverse bars with one another and with the parietes; mouth on the dorsal side, in front of the fourth band; heart above and in front of the mouth.

Moluccas and New Zealand.

* 11. **D. denticulatum,** *Quoy, l.c.*, iii., *pl.* 89, *ff.* 25–28. Small, hyaline, ovato-cylindrical, sub-truncated, perforated at both ends, anterior crenulated, with eight salient bands. Length, ·16.

New Zealand (Woodward's Mollusca). Molucca Islands.

ADDENDUM.

The following additional species is described by Dr. von. Martens in his list referred to in the Preface :—

Cerithium (Bittium) terebelloides, *sp. nov.* (*Martens' MSS.*) Conical, turreted, yellowish on the upper three whorls; body whorl with four smooth spiral keels of nearly equal size, the interstices between them with faint perpendicular striæ; at the base of the body whorl there is a blunt angle, and beneath it a fifth keel. Aperture deeply notched at the base, without any protruding canal. The specimens, which are imperfect at the top, have a length of ·33 inches, and a breadth of ·1. They show ten whorls.—(*Martens.*)

This is the same as my *Cerithium cinctum*, and I gladly give the precedence to Dr. von Martens' name.

INDEX TO THE GENERA AND SPECIES.

[*The synonyms are printed in italics.*]

	Page
ACANTHOCHÆTES	49
biramosus	50
hookeri...	50
ovatus	50
porphyreticus	50
ACANTHOPLEURA	49
cælatus...	49
ciliata	49
complexa	49
nobilis	49
ADEORBIS	35
varius	35
ÆOLIS	54
longicauda	54
AKERA	53
tumida...	53
ALECTO	103
disposita	103
racemosa	103
AMPHIBOLA	58
avellana	58
ANATINA	61
tasmanica	61
ANCILLARIA	17
albisulcata	17
australis	17
obesa	18
pyramidalis	18
ANOMIA	83
alectus	83
cytæum	83
stowei	83
APLUSTRUM	52
lineatum	52
APLYSIA	53
ARGONAUTA...	2
nodosa	2
Arthemis australis	71
ASCIDIUM	104
cærulea	105
erythrostoma	104
janthinoctoma	105

	Page
ASPERGILLUM	59
novæ zealandiæ	60
Auricula zealandiæ	57
BANKIVIA	39
varians...	40
BARBATIA	79
pusilla	79
sinuata...	79
BARNEA	59
similis	59
BEANIA	91
swainsoni	91
BICELLARIA...	92
tuba	92
BOLTENIA	105
pedunculata	105
BOTRYLLUS	105
racemosus	105
BUCCINULUS	51
albus	51
kirki	51
BUCCINUM	14
cinctum	15
costatum	14
gradatum	15
lacunosum	16
lævigatum	14
linea	10
lineolatum	14
luridum	14
maculatum	14
maculosa	15
raphanus	11
testudineum	15
triton	11
turgida	14
zealandicum	14
BUGULA	92
dentata	93
neritina	92
prismatica	93

	Page
BULLA	52
australis	52
oblonga	52
quoyi	52
striata	52
zealandica	52
CABEREA	91
boryi	91
lata	92
CALLISTA	71
disrupta	71
multistriata	71
CALYPTRÆA...	31
dilatata	31
maculata	31
CANCELLARIA	25
trailli	26
CARBASEA	93
cyanthiformis	94
episcopalis	94
indivisa	94
pisciformis	93
CARDITA	77
tridentata	77
CARDIUM	73
pulchellum	73
striatulum	73
CARINARIA	6
australis	6
CASSIDULA	57
mustelina	57
CASSIS	20
achatina	20
pyrum	20
CATENICELLA	88
alata	89
aurita	88
cribraria	88
elegans...	89
hastata...	88
margaritacea	89
perforata	89
ringens...	89
ventricosa	88
Cavolina affinis	5
CELLEPORA	98
agglutinans	99
ampliata	99
bispinata	99
mamillata	99
pumicosa	99
CELLULARIA	89
cuspidata	89
CERITHIUM	26
alternatum	26
australis	26
bicarinata	26
cinctum	27
exilis	27
kirki	27

	Page
CERITHIUM—*continued.*	
minimus	27
subcarina	26
terebelloides	107
CHAMOSTRÆA	62
albida	62
CHEMNITZIA	22
zealandica	22
CHIONE	69
alatus	71
costata	70
crebra	70
dieffenbachii	70
gibbosa...	71
lamellata	69
lima	70
mesodesma	70
paupercula	71
stuchburyi	70
yatei	69
CHITON	46
æreus	48
canaliculatus	46
circumvallatus	47
concentricus	46
contractus	48
empleurus	48
longicymbus	47
pellis-serpentis	46
quoyi	47
rudis	48
sinclairi	46
stangeri	48
sulcatus	47
viridis	47
CHRYSOSTOMA	36
fulminata	36
inconspicua	36
rosea	36
simulata	36
CINCTIPORA	102
elegans	103
CLADOPODA	30
rosea	30
zealandica	30
COLUMBELLA	20
rubiginosa	20
zebra	20
CONUS	23
distans...	23
zealandicus	23
CORBULA	60
adusta	61
catlowæ	61
zealandica	61
CRANIA	87
CRENELLA	78
discors	78
Crepidula costata	32
CRISIA	100
aculeata	101
eburnea	100

	Page
CRYPTA	32
aculeata	32
contorta	32
costata	32
unguiformis	32
CRYPTOCONCHUS	51
monticularis	51
zealandicus	51
CRYPTODON...	74
CYCLINA	72
kroyeri	72
CYLICHNA	52
striata	52
CYPRÆA	25
arabica	25
caput-serpentis	25
punctata	25
punctulata	25
stercus-muscarum ...	25
tessellata	25
DAPHNELIA	12
letourneuxiana	12
DARINA	64
pusilla	64
DENTALIUM	5
pacificum	5
DIACHORIS	94
buskiana	94
inermis...	94
magellanica	94
DILOMA	38
nigerrima	38
DIMETOPIA	95
cornuta	95
spicata	95
DISCOPORELLA	103
hispida...	104
DOLIOLUM	106
denticulatum	106
DOLIUM	20
variegatum	20
DORIS	53
carinata	53
DOSINIA	71
anus	71
subrosea	72
ELENCHUS	39
dilatatus	39
elegans	39
iris	39
purpuratus	39
EMARGINULA	42
striatula	42
EMMA	90
crystallina	90
tricellata	90
ESCHARA	99
flexuosa	99
lichenoides	100

	Page
ESCHARA—*continued.*	
platalea	100
unicornis	99
EUCHELUS	37
bellus	37
EULIMA	22
chathamensis	23
FARCIMINARIA	94
aculeata	95
blainvillii	95
FISSURELLA	42
rubiginosa	42
squamosa	42
FLUSTRA	93
papyracea	93
FUSUS	8
australis	8
bicinctus	10
corticatus	9
dilatatus	8
duodecimus	10
inferus	9
linea	10
lineatus	10
littorinoides	10
mandarinus	8
nodosus	11
pensum	8
plebeius	9
stangeri	9
traversi	9
triton	11
varius	9
vittatus	10
zealandicus	8
GIBBULA	40
nitida...	40
sanguinea	40
GOULDIA	76
isabella	76
HALIOTIS	40
albicans	41
australis	40
cruenta	41
cunninghamii	41
iris	40
nævosa	41
pulcherrima	41
stomatiaformis	41
virginea	41
zealandica	41
HALOPHILA	92
johnstoniæ	92
HAMINEA	52
obesa	52
HEMESCHARA	100
fairchildi	100
HEMIMACTRA	63
ovata	63

	Page
Hiatella minuta	60
HIATULA	66
incerta	66
nitens	66
nitidula	66
siliquæ	66
HIPPONYX	32
cornucopiæ	32
HORNERA	101
gouldiana	101
squamosa	101
striata	101
HYALEA	5
affinis	5
IANTHINA	6
communis	6
exigua	6
ianthina	6
IDMONEA	102
giebeliana	102
IMPERATOR	34
cookii	34
davisii	34
imperialis	34
KATHARINA	50
violacea	50
KELLIA	75
cycladiformis ...	75
KRAUSSIA	86
lamarkiana	86
LABIO	37
cingulatus	37
hectori	37
subrostrata	37
zealandicus	37
LACHESIS	12
sulcata	12
LAMELLARIA	21
indica	21
LEDA	81
australis	81
LEPRALIA	96
angela	96
areolata	98
biforis	98
cancer	97
ciliata	96
grandis	98
hyalina	98
lyallii	97
malusii	98
nitida	97
pellucida	97
pertusa	98
reticulata	96
urceolata	97
variolosa	97
vellicata	98

	Page
LEPRALIA—*continued.*	
ventricosa	97
LIMA	82
bullata	83
squamosa	83
LIOTIA	34
shandi	35
LITHODOMUS	79
gruneri	79
truncatus	79
LITTORINA	27
bullata	28
cincta	27
diemenensis	27
luctuosa	28
novæ zealandiæ	28
pyramidalis	27
vilis	27
Littus lævis	4
LOLIGO	3
australis	3
Lottia fragilis	43
pileopsis	43
LUCAPINA	42
monilifera	42
LUCINA	74
divaricata	74
LUTRARIA	64
deshayesii	64
lanceolata	64
LYONSIA	61
vitrea	61
MACTRA	63
æquilatera	63
discors	63
donaciformis	63
murchisoni	63
scalpellum	63
MAGAS	86
cumingii	86
evansii	86
MARGARETTA	101
barbata	101
cereoides	101
MARGINELLA	19
albescens	19
vittata	19
MELAMPUS	56
adamsianus	56
commodus	56
costellaris	57
sulcatus	57
zealandicus	56
MEMBRANIPORA	95
brunnea	96
cyclops	96
lineata	96
magnilabris	96
membranacea	95
pilosa	95
tessellata	96

	Page
MENIPEA	90
cirrata	90
MESODESMA	67
chemnitzii	68
cuneata	68
elongata	68
lata	68
novæ zealandiæ	68
ovalis	68
spissa	68
sub-triangulata	68
ventricosa	68
MITRA	19
aurantiaca	19
nucea	19
obscura	19
MODIOLA	78
albicosta	78
securis	78
Modiolaera impacta	78
MONILEA	40
zealandica	40
Monodonta angulatum ...	37
reticularis	37
MULINIA	64
notata	64
MUREX	7
eos	8
lyratus	7
octogonus	7
zealandicus	7
MUSCARIA	93
armata	93
MYODORA	62
brevis	62
ovata	62
striata	62
MYSIA	75
globularis	75
novæ zealandiæ	75
zealandica	75
MYTILICARDIA	76
excavata	76
MYTILUS	77
ater	78
canaliculatus	77
dunkeri	77
hirsutus	77
latus	78
latus	77
magellanicus	77
opalus	77
polyodontes	77
smaragdinus	77
NACELLA	45
affinis	45
argentea	45
cantharus	46
earli	45
flexuosa	45
NACELLA—*continued.*	Page
floccata	45
radians	45
stellularia	45
NASSA	15
corticata	15
nigella	15
novæ zealandiæ	15
rutilans	15
NATICA	21
vitrea	21
zealandica	21
NAUTILUS	5
pompilius	5
NEÆRA	62
trailli	62
NERITA	33
atrata	33
nigra	33
NUCULA	80
consobrina	80
margaritacea	80
strangei	80
OBELISCUS	22
roseus	22
OCTOPUS	1
lunulatus	1
ODOSTOMIA	22
lactea	22
OLIVA	17
erythrostoma	17
OMMASTREPHES	2
sloanii	3
ONCHIDELLA	54
nigricans	54
ONCHIDORIS	54
tuberculatus	54
ONYCHOTEUTHIS	2
bartlingii	2
OSTREA	84
lutaria	84
mordax	84
purpurea	84
virginica	84
PANOPÆA	60
solandri	60
zealandica	60
PARMOPHORUS	43
australis	43
unguis	43
PATELLA	43
flava	44
imbricata	44
inconspicua	43
margaritaria	44
octoradiata	44
ornata	44
pottsi	44
stellifera	44
tramoserica	44

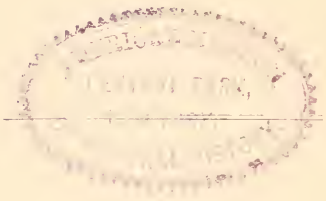
	Page
PATINELLA	103
verrucaria	103
PECTEN	81
dieffenbachii	82
gemmulatus	81
multicostatus	82
novæ zealandiæ	82
picæ	82
radiatus	82
vellicatus	82
zealandiæ	81
PERONIA	54
patelloides	54
PECTUNCULUS	80
laticostatus	80
striatularis	80
PETRICOLA	73
serrata	73
PHILINE	53
angasi	53
PHOLADIDEA	59
tridens	59
PHORUS	31
onustus	31
PINNA	79
zealandica	79
PINNOCTOPUS	1
cordiformis	1
PLACUNANOMIA	83
ione	84
zealandica	84
PLEUROTOMA	11
albula	12
lævis	12
novæ zealandiæ	11
rosea	11
trailli	11
PLUMATELLA	104
aplinii	104
Pollia linea	10
lineolata	10
POLYDONTA	36
chathamensis	36
elegans	36
tiarata	36
tricarinata	37
tuberculata	36
PSAMMOBIA	65
affinis	66
lineolata	66
stangeri	65
zonalis	66
PURPURA	16
albomarginata	16
emarginata	16
haustrum	16
maculosa	15
quoyi	17
rugosa	16
scobina	16
succincta	16

	Page
PURPURA—*continued.*	
textiliosa	16
tristis	16
turgida	14
PUSTULIPORA	102
delicatula	102
haastiana	102
porcellanica	102
proboscidæ	102
PYROSOMA	105
atlantica	105
elegans	105
PYTHINA	75
stowei	76
RAETA	65
perspicua	65
RANELLA	13
argus	13
leucostoma	13
tumida	13
vexillum	13
RETEPORA	100
cellulosa	100
reticulata	100
RHYNCHONELLA	87
nigricans	87
RICINULA	17
iodostoma	17
RISELLA	28
kielmanseggi	28
RISSOA	28
impolita	29
nana	28
plicata	29
purpurea	29
rosea	29
rugulosa	28
subfusca	28
ROTELLA	35
zealandica	35
SALICORNARIA	91
farciminoides	91
hirsuta	91
malvinensis	91
SALPA	106
costata	106
infundibuliformis ...	106
mucronata	106
SAXICAVA	60
arctica	60
australis	60
SCALARIA	21
lineolata	22
zelebori	21
SCRUPOCELLARIA	90
scruposa	90
SEPIA	4
apama	4
SEPIOTEUTHIS	3
lessoniana	3

	Page
SEPIOTEUTHIS—*continued*.	
major	3
SILIQUARIA	30
australis	31
lævigata	31
SIPHONARIA	55
australis	55
cancer	55
denticulata	55
diemenensis	55
funiculata	55
obliquata	56
scutellum	55
spinosa	56
zealandica	55
SIPHONIUM	30
lamellosum	30
SOLENELLA	81
cumingii	81
SOLEMYA	76
australis	76
SPIRULA	4
australis	4
lævis	4
STROMBUS	23
novæ zealandiæ	23
pacificus	23
troglodytes	24
STRUTHIOLARIA	24
crenulata	24
gigas	24
nodulosa	24
papulosa	24
scutulata	24
straminea	24
vermis	24
TAPES	72
fabagella	72
galactites	72
intermedia	72
TECTURA	43
fragilis	43
pileopsis	43
TELLINA	66
albinella	66
decussata	67
deltoidalis	67
lactea	67
lintea	67
sublenticularis	67
subovata	67
ticaonica	67
TENNYSONIA	103
stellata...	103
TEREBRATELLA	85
cruenta	85
inconspicua	85
rubicunda	85
rubra	85
sanguinea	85
zealandica	85
TEREDO	59
antarctica	59
THRACIA	61
novæ zealandiæ	61
TONICIA	48
corticata	50
rubiginosa	49
undulata	48
zig-zag...	49
TRICHOTROPIS	26
inornata	26
TRITON	12
acclivis...	13
australe	13
spengleri	13
variegatum	12
TRIVIA	25
australis	25
coccinella	25
TROCHITA	31
tenuis	32
TROCHUS	35
agglutinans	31
gibberosus	35
granatum	38
melanostoma	38
viridis	35
TUBULIPORA	103
glomerata	103
patellata	103
TUGALI	42
elegans	42
parmophoroides	43
TURBO	33
granosus	33
rubicundus	33
smaragdus	33
undulatus	34
TURRITELLA	29
fulminata	29
lineolata	29
pagoda	29
rosea	29
symetrica	30
vittata	29
VANGANELLA	65
taylori	65
VENERICARDIA	74
australis	74
zealandica	74
VENERUPIS	73
brevis	73
reflexa	73
VENUS	69
crassa	70
denticulata	70
mesodesma	70
oblonga	69
spissa	70
spurca	70

VENUS—*continued.*	Page
tuberosa	69
violacea	70
zealandica	69
zealandicus	70
VERMETUS	30
cariniferus	30
roseus	31
VOLA	82
laticostatus	82
VOLUTA	18
arabica	18
cymbiola	18
fusus	18
gracilis	18
kirki	18
pacifica	18

VOLUTA—*continued.*	Page
subplicata	18
WALDHEIMIA	85
lenticularis	85
WALTONIA	86
valencienni	86
ZENATIA	64
acinaces	64
ZIZIPHINUS	38
cunninghami	38
punctulatus	39
scitulus	39
selectus	38
spectabilis	38
tigris	38



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